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CHINA HARBOUR ENGINEERING CO. LTD.

CONTRACT NO.: HY/2013/02

HONG KONG – ZHUHAI- MACAO BRIDGE HONG KONG BOUNDARY CROSSING FACILITIES – INFRASTRUCTURE WORKS STAGE I (WESTERN PORTION)

MONTHLY EM&A REPORT NO. 27

(01 FEBRUARY – 28 FEBRUARY 2017)

Prepared by: _____
LO, Ting Yi

Certified by: _____
LAU, Chi Leung
Environmental Team Leader

Issued Date: 06 March 2017 Report No.: ENA71169

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Your Ref. : ---
Our Ref. : OC/70119/CLL

09 March 2017

Ramboll Environ Hong Kong Limited
21st Floor, BEA Harbour View Centre
56 Gloucester Road,
Wan Chai
Hong Kong

By E-mail

Attn: Mr. Raymond Dai

Dear Mr. Dai,

Contract No. HY/2013/02
Hong Kong – Zhuhai – Macao Bridge
Hong Kong Boundary Crossing Facilities – Infrastructure Works Stage I (Western Portion)
Monthly EM&A Report for February 2017

In accordance with the requirement specified in Condition 5.4 of the Environmental Permit No. EP-353/2009/K, we are pleased to submit the certified EM&A Report for February 2017 revised with the IEC's comment for your onward verification.

Yours faithfully,
ETS-TESTCONSULT LIMITED

Mr. C. L. Lau
Environmental Team Leader

CLL/pn

RAMBOLL ENVIRON

Ref.: HYDHZMBEEM00_0_5134L.17

9 March 2017

By Fax (3468 2076) and By Post

AECOM Asia Co. Ltd.
The PRE's Office
5 Ying Hei Road, Tung Chung, Lantau
Hong Kong

Attention: Mr. Ringo Tso

Dear Sir,

Re: Agreement No. CE 48/2011 (EP)
Environmental Project Office for the
HZMB Hong Kong Link Road, HZMB Hong Kong Boundary Crossing Facilities, and Tuen Mun-Chek Lap Kok Link – Investigation

Contract No. HY/2013/02 – HZMB HKBCF – Infrastructure Works Stage I (Western Portion)
Monthly Environmental Monitoring & Audit Report for February 2017

Reference is made to the Environmental Team's submission of Monthly Environmental Monitoring & Audit Report for February 2017 certified by the ET Leader (ET's ref.: "OC/70119/CLL" dated 9 March 2017) and provided to us via e-mail on 9 March 2017.

We are pleased to inform you that we have no adverse comment on the captioned submission. We write to verify the captioned submission in accordance with Condition 5.4 of the Environmental Permit No. EP-353/2009/K.

Thank you very much for your attention and please feel free to contact the undersigned should you require further information.

Yours faithfully,
For and on behalf of
Ramboll Environ Hong Kong Limited

Raymond Dai
Independent Environmental Checker

c.c.	HyD	Mr. Vico Cheung	(By Fax: 3188 6614)
	HyD	Mr. Chee-Kuen Yu	(By Fax: 3188 6614)
	ETS	Mr. C. L. Lau	(By Fax: 2695 3944)
	CHEC	Mr. Kenny Yu	(By Fax: 3915 0300)

Internal: DY, YH, ENPO Site

Ramboll Environ Hong Kong Limited 英環香港有限公司
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The Contract is part of Hong Kong–Zhuhai–Macao Bridge HKBCF which is a "Designated Project", under Schedule 2 of the Environmental Impact Assessment Ordinance (EIAO) (Cap 499) and Environmental Impact Assessment (EIA) Report (Register No. AEIAR-145/2009) was prepared for the Project. The current Environmental Permit (EP) No. EP-353/2009/K for HKBCF was issued on 11 April 2016. These documents are available through the EIA Ordinance Register. Site preparation works of the Contract was started on 25 July 2014 and the construction works of the Contract commenced on 24 November 2014.

ETS-Testconsult Limited has been appointed by the Contractor to implement the Environmental Monitoring & Audit (EM&A) programme for the Contract in accordance with the Updated EM&A Manual for HKBCF (Version 1.0) and provide environmental team services to the Contract.

This is the Twenty-seventh Monthly Environmental Monitoring and Audit (EM&A) Report for the Contract which summaries findings of the EM&A works conducted during the reporting period from 01 February to 28 February 2017.

Site Activities

As informed by the Contractor, site activities were carried out in this reporting month:

- *Bored piles works in Portion C;*
- *Pier / Abutment in Portion C & F;*
- *Pile Cap in Portion C & F;*
- *Pre-bored H-pile for sign gantries in Portion C & F;*
- *Storm drain and water main construction;*
- *Retaining wall, slop and earth works;*
- *Footing construction of directional signs, cable trench and ducting;*
- *Marine Delivery of precast segment & Construction of bridge deck in Portion D, A, E, C & F*
- *Marine sediment excavation activities from the land-based works and corresponding disposal at the designated disposal sites*

Environmental Monitoring and Audit Progress

The monthly EM&A programme was undertaken in accordance with the Updated EM&A Manual for HKBCF (Version 1.0). It should be noted that the air quality and noise monitoring works for the Contract are covered by Contract No. HY/2010/02 "Hong Kong-Zhuhai-Macao Bridge HKBCF – Reclamation Works" and Contract No. HY/2011/03 "Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road – Section between Scenic Hill and HKBCF". The ET of the Contract or another ET of the HZMB project is required to conduct impact air quality monitoring at AMS6 and AMS7, noise monitoring at NMS2 and NMS3B, water quality monitoring show in **Figure 2** and dolphin monitoring show in **Figure 3** as part of EM&A programme if these monitoring stations are no longer covered under Contract No. HY/2010/02 and HY/2011/03. However, this is subject to ENPO's final decision on which ET should carry out the monitoring works at these stations. The dates of site inspection during the reporting period are listed below:

Environmental Site Inspection: 02, 09, 16 & 23 February 2017

Breaches of Action and Limit Levels

Summary of Action and Limit Level exceedance of 1-hr TSP level and 24-hr TSP level at AMS6 shall be referred to the monthly EM&A report prepared by Contract No. HY/2011/03.

There was no Action and Limit Level exceedance of 1-hr TSP level and 24-hr TSP level recorded at station AMS7 by the Environmental Team of Contract No. HY/2010/02 during the reporting period.

There was no Action and Limit Level exceedance for noise recorded at station NMS2 and station NMS3B by the Environmental Team of Contract No. HY/2010/02 during the reporting period.

There were two Action Level exceedances of SS on impact water quality monitoring at station IS8 and SR7 during mid-flood tide recorded on 06 February 2017 and 15 February 2017, one Action Level exceedance of SS on impact water quality monitoring at station SR6 during mid-ebb tide recorded on 10 February 2017. After investigation, there was concluded that the three exceedances were not relevant to this Contract since there was no marine works or barge of this Contract worked at HKBCF reclamation site near the sea area or area near the monitoring station IS8 and SR7 from 04 February 2017 to 06 February 2017 and 13 February 2017 to 15 February 2017 which was unlikely to generate suspended solids in the marine water. Besides, during 08 February 2017 to 10 February 2017, there was no marine works worked at HKBCF reclamation site near the sea area or area near the monitoring station SR6 except only one marine pre-cast segment delivery barge which passed through the north-east side with distance more than 4000 meters from the monitoring station SR6. Therefore, it is unlikely that the SS exceedances recorded at IS8 and SR7 during mid-flood tide on 06 February 2017 and 15 February 2017 and SR6 during mid-flood tide on 10 February 2017 were contributed by the works under Contract No. HY/2013/02. The Investigation Reports No. 011, 012 and 013 (including the causes of exceedance, action taken and recommendation for mitigation) for Action or Limit Level Non-compliance were provided in **Appendix J**. There was no Action and Limit Level exceedance recorded on other monitoring date at the monitoring stations showed at **Table 4.1** by the Environmental Team of Contract No. HY/2010/02 during the reporting period.

Impact dolphin monitoring results at all transects are reported in the EM&A Report prepared for Contract No. HY/2010/02.

Complaint Log

There was no complaint received in relation to the environmental impact during the reporting period.

Notifications of Summons and Successful Prosecutions

There were no notifications of summons or prosecutions received during the reporting period.

Reporting Change

There were no reporting changes during the reporting period.

Future Key Issues

The future key issues to be undertaken in the upcoming month are as follows:

- *Bored Piling in Portion C;*
- *Pier / Abutment in Portion C & F;*
- *Pile Cap in Portion C & F;*
- *Pre-bored H-pile for sign gantries in Portion C & F;*
- *Storm drain and water main construction;*
- *Retaining wall, slop and earth works*
- *Footing construction of directional signs, cable trench and ducting;*
- *Delivery of precast segment & Construction of bridge deck in Portion D, A, E, C & F*
- *Marine sediment excavation activities from the land-based works and corresponding disposal at the designated disposal sites*

1. INTRODUCTION

1.1. Basic Project Information

1.1.1. This Monthly Environmental Monitoring and Audit (EM&A) Report is prepared for Contract HY/2013/02 "Hong Kong–Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities (HKBCF) – Infrastructure Works Stage I (Western Portion)" (hereafter referred to as "the Contract") for the Highways Department of Hong Kong Special Administrative Region (HKSAR). The Contract was awarded to China Harbour Engineering Co., Ltd. (hereafter referred to as "the Contractor") and ETS-Testconsult Limited was appointed as the Environmental Team (ET) by the Contractor.

1.1.2. The Contract is part of Hong Kong–Zhuhai–Macao Bridge HKBCF which is a "Designated Project", under Schedule 2 of the Environmental Impact Assessment Ordinance (EIAO) (Cap 499) and Environmental Impact Assessment (EIA) Report (Register No. AEIAR-145/2009) was prepared for the Project. The current Environmental Permit (EP) No. EP-353/2009/K for HKBCF was issued on 11 April 2016. These documents are available through the EIA Ordinance Register. Site preparation works of the Contract started on 25 July 2014 and the construction works of the Contract commenced on 24 November 2014. The works area of the Contract is shown in **Appendix A**.

1.1.3. The proposed works under this Contract comprise the following:

- Construction of the viaducts and roads at the western portion of Hong Kong Boundary Crossing Facilities (HKBCF) mainly for connection with the Hong Kong**–**Zhuhai**–**Macao Bridge (HZMB), Hong Kong Link Road (HKLR), Hong Kong International Airport (HKIA) and the Tuen Mun-Chek Lap Kok Link (TM-CLKL);
- Construction of the road modification at the SkyCity Interchange at Airport Island;
- Construction of associated street lighting, street furniture, road marking, road signage, drainage, sewerage, fresh water and flushing water supply, irrigation, landscape, electrical and mechanical (E&M), utilities and services works;
- Provisioning of civil engineering works and power supply installation for the Traffic Control and Surveillance System TCSS;
- Other works in accordance with the Contract.

1.1.4. This is the Twenty-seventh Monthly Environmental Monitoring and Audit (EM&A) Report for the Contract which summaries the audit findings of the EM&A programme during the reporting period from 01 February to 28 February 2017.

1.2. Project Organization

1.2.1. The project organization structure and lines of communication with respect to the on-site environmental management structure is shown in **Appendix B**. The key personnel contact names and numbers are summarized in **Table 1.1.**

Table 1.1 Contact Information of Key Personnel

Party	*Position*	*Name of Key Staff*	*Tel. No.*	*Fax No.*
Engineer or Engineer's Representative (AECOM Asia Co. Ltd.)	*Resident Engineer*	*Mr. Winston Wong*	*6330 8293*	*3152 5116*
Environmental Project Office / Independent Environmental Checker (Ramboll Environ Hong Kong Limited)	*Environmental Project Office Leader*	*Mr. Y. H. Hui*	*3465 2888*	*3465 2899*
	Independent Environmental Checker	*Mr. Raymond Dai*	*3465 2888*	*3465 2899*
	Environmental Site Supervisor	*Mr. Ray Yan*	*5181 8165*	*3465 2899*
Contractor (China Harbour Engineering Co., Ltd.)	*Environmental Officer*	*Mr. Richard Ng*	*5977 0593*	*3915 0300*
	Assistant Environmental Officer	*Mr. Paper Chan*	*6486 8967*	*3915 0300*
	Environmental Supervisor	*Mr. Endy Tse*	*5512 2662*	*3915 0300*
Environmental Team (ETS-Testconsult Ltd.)	*Environmental Team Leader*	*Mr. C. L. Lau*	*2946 7791*	*2695 3944*

1.3 Construction Programme

1.3.1 A copy of the Contractor's construction programme is provided in **Appendix C**.

1.4 Construction Works Undertaken During the Reporting Period

1.4.1 A summary of the construction activities undertaken during this reporting period is shown below:

- *Bored piles works in Portion C;*
- *Pier / Abutment in Portion C & F;*
- *Pile Cap in Portion C & F;*
- *Pre-bored H-pile for sign gantries in Portion C & F;*
- *Storm drain and water main construction;*
- *Retaining wall, slop and earth works;*
- *Footing construction of directional signs, cable trench and ducting;*
- *Marine Delivery of precast segment & Construction of bridge deck in Portion D, A, E, C & F*
- *Marine sediment excavation activities from the land-based works and corresponding disposal at the designated disposal sites*

2 AIR QUALITY MONITORING

2.1 Monitoring Locations

2.1.1 The air quality monitoring works for the Contract are covered by Contract No. HY/2010/02 Hong Kong-Zhuhai-Macao Bridge HKBCF – Reclamation Works and Contract No. HY/2011/03 Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road – Section between Scenic Hill and HKBCF. The ET of the Contract or another ET of the HZMB project is required to conduct impact air quality monitoring at AMS6 and AMS7 as part of EM&A programme if these air quality monitoring stations are no longer covered under Contract No. HY/2010/02 and HY/2011/03. **Table 2.1** and **Figure 1** shows the locations of air monitoring stations.

Table 2.1 Air Quality Monitoring Locations

Identification No.	Location Description
AMS6(1)	Dragonair / CNAC (Group) Building
AMS7(1) (2)	Hong Kong SkyCity Marriott Hotel

Remarks:
(1) The ET of this Contract should conduct impact air quality monitoring at the AMS listed in the table as part of EM&A programme according to latest notification from ENPO when the monitoring station(s) is/are no longer covered by another ET of the HZMB project.
(2) The air quality monitoring location AMS7A was relocated back to the original monitoring location AMS7 of the updated EM&A Manual started from January 2016.

2.2 Monitoring Requirements

2.2.1 The monitoring requirements, monitoring equipment, monitoring parameters, frequency and duration, monitoring methodology, monitoring schedule, meteorological information are detailed in the monthly EM&A Reports prepared for Contract Nos. HY/2010/02 and HY/2011/03.

2.2.2 The Action and Limit Levels for 1-hr TSP and 24-hr TSP are provided in **Table 2.2** and **Table 2.3** respectively. The Action and Limit Levels of AMS7 are as same as its original levels and AMS7A.

Table 2.2 Action and Limit Levels for 1-hour TSP

Monitoring Station	Action Level,$\mu g/m^3$	Limit Level,$\mu g/m^3$
AMS6 – Dragnair / SNAC (Group) Building (HKIA)	360	500
AMS7 – Hong Kong SkyCity Marriott Hotel	370	500

Table 2.3 Action and Limit Levels for 24-hour TSP

Monitoring Station	Action Level,$\mu g/m^3$	Limit Level,$\mu g/m^3$
AMS6 – Dragnair / SNAC (Group) Building (HKIA)	173	260
AMS7 – Hong Kong SkyCity Marriott Hotel	183	260

2.2.3 The event and action plan is provided in **Appendix D**.

2.2.4 If exceedance(s) at these stations is/are recorded by the ET of the Contract or referred by the other ET under the HZMB project to the Contract, the ET of the Contract will carry out an investigation and findings will be reported in the monthly EM&A Report.

2.3 Monitoring Results

2.3.1 The monitoring results for AMS6 and AMS7 are reported in the monthly EM&A Reports prepared for Contract Nos. HY/2011/03 and HY/2010/02 respectively.

2.3.2 Summary of Action and Limit Level exceedance of 1-hr TSP level and 24-hr TSP level at AMS6 shall be referred to the monthly EM&A report prepared by Contract No. HY/2011/03.

2.3.3 There was no Action and Limit Level exceedance of 1-hr TSP level and 24-hr TSP level recorded at station AMS7 by the Environmental Team of Contract No. HY/2010/02 during the reporting period.

3 NOISE MONITORING

3.1 Monitoring Locations

3.1.1 The noise monitoring works for the Contract are covered by Contract No. HY/2010/02 Hong Kong-Zhuhai-Macao Bridge HKBCF – Reclamation Works. The ET of the Contract or another ET of the HZMB project is required to conduct noise monitoring at NMS2 and NMS3B as part of EM&A programme if these monitoring stations are no longer covered under Contract No. HY/2010/02. **Table 3.1** and **Figure 1** shows the locations of noise monitoring stations.

Table 3.1 Construction Noise Monitoring Locations

Identification No.	Location Description
NMS2(1)	Sea View Crescent
NMS3B(1) (2)	Site Boundary of Site Office Area at Works Area WA2

Remarks:
(1) The ET of this Contract should conduct impact noise monitoring at the NMS listed in the table as part of EM&A programme according to latest notification from ENPO when the monitoring station(s) is/are no longer covered by another ET of the HZMB project.
(2) The Action and Limit Levels for schools will be applied for this alternative monitoring location.

3.2 Monitoring Requirements

3.2.1 The monitoring requirements, monitoring equipment, monitoring parameters, frequency and duration, monitoring methodology, monitoring schedule, meteorological information are detailed in the monthly EM&A Reports prepared for Contract No. HY/2010/02.

3.2.2 The Action and Limit Levels for construction noise are provided in **Table 3.2**

Table 3.2 Action and Limit Levels for Construction Noise

Parameter	Action Level	Limit Level
07:00 – 19:00 hours on normal weekdays	When one documented complaint is received	75 dB(A)*

Notes:
If works are to be carried out during restricted hours, the conditions stipulated in the construction noise permit issued by the Noise Control Authority have to be followed.
* Reduce to 70 dB(A) for schools and 65 dB(A) during school examination period.

3.2.3 The event and action plan is provided in **Appendix D**.

3.2.4 If exceedance(s) at these stations is/are recorded by the ET of the Contract or referred by the other ET under the HZMB project to the Contract, the ET of the Contract will carry out an investigation and findings will be reported in the monthly EM&A Report.

3.3 Monitoring Results

3.3.1 The monitoring results for NMS2 and NMS3B are reported in the monthly EM&A Reports prepared for Contract No. HY/2010/02. There was no exceedance for noise recorded at station NMS2 and station NMS3B by the Environmental Team of Contract No. HY/2010/02 during the reporting period.

4 WATER QUALITY MONITORING

4.1 Monitoring Locations

The water monitoring works for the Contract are covered by Contract No. HY/2010/02 Hong Kong-Zhuhai-Macao Bridge HKBCF – Reclamation Works. The ET of the Contract or another ET of the HZMB project is required to conduct water quality monitoring at twenty one stations (9 Impact Stations, 7 Sensitive Receiver Stations and 5 Control/Far Field Stations). **Table 4.1** and **Figure 2** shows the locations of water quality monitoring stations.

Table 4.1 Water Quality Monitoring Stations (construction phases)

Station	Description	East	North
IS5	Impact Station (Close to HKBCF construction site)	811579	817106
IS(Mf)6	Impact Station (Close to HKBCF construction site)	812101	817873
IS7	Impact Station (Close to HKBCF construction site)	812244	818777
IS8	Impact Station (Close to HKBCF construction site)	814251	818412
IS(Mf)9	Impact Station (Close to HKBCF construction site)	813273	818850
IS10	Impact Station (Close to HKBCF construction site)	812577	820670
IS(Mf)11	Impact Station (Close to HKBCF construction site)	813562	820716
IS(Mf)16	Impact Station (Close to HKBCF construction site)	814328	819497
IS17	Impact Station (Close to HKBCF construction site)	814539	820391
SR3	Sensitive receivers (San Tau SSSI)	810525	816456
SR4(N)	Sensitive receivers (Tai Ho)	814705	817859
SR5	Sensitive receivers (Artificial Reef in NE Airport)	811489	820455
SR6	Sensitive receivers (Sha Chau and Lung Kwu Chau Marine Park)	805837	821818
SR7	Sensitive receivers (Tai Mo Do)	814293	821431
SR10A [1]	Sensitive receivers (Ma Wan FCZ)1	823741	823495
SR10B(N)[1]	Sensitive receivers (Ma Wan FCZ)2	823683	823187
CS(Mf)3	Control Station	809989	821117
CS(Mf)5	Control Station	817990	821129
CS4	Control Station	810025	824004
CS6	Control Station	817028	823992
CSA [2]	Control Station	818103	823064

Note:
(1) Additional monitoring station for Ma Wan FCZ.
(2) Additional control monitoring station for Ma Wan FCZ
Remarks:
The ET of this Contract should conduct impact water quality monitoring at the WQMS listed in the table as part of EM&A programme according to latest notification from ENPO when the monitoring station(s) is/are no longer covered by another ET of the HZMB project. The ET of the Contract shall communicate and share the monitoring data to the ET(s) of other works contracts if the water quality monitoring station(s) is/are as part of EM&A programme.

4.2 Monitoring Requirements

The monitoring requirements, monitoring equipment, monitoring parameters, frequency and duration, monitoring methodology, monitoring schedule, meteorological information are detailed in the monthly EM&A Reports prepared for Contract No. HY/2010/02.

4.2.1 The event and action plan is provided in **Appendix D**.

4.2.2 The Action and Limit Levels for Water Quality are provided in **Table 4.2**

Table 4.2 Action and Limit Levels for Water Quality

Parameters	Action	Limit
DO in mg/L (Surface, Middle & Bottom)	Surface and Middle 5.0 Bottom 4.7	Surface and Middle 4.2 (except 5 mg/L for FCZ) Bottom 3.6
SS in mg/L (depth-averaged) at all monitoring stations and control stations	23.5 and 120% of upstream control station's SS at the same tide of the same day*	34.4 and 130% of upstream control station's SS at the same tide of the same day and 10mg/L for WSD Seawater intakes*
Turbidity in NTU (depth-averaged)	27.5 and 120% of upstream control station's turbidity at the same tide of the same day*	47.0 and 130% of upstream control station's turbidity at the same tide of the same day*

* Remarks: Reference is made to EPD approval of adjustment of water quality assessment criteria issued and became effective on 18 February 2013.

Notes:
1. "depth-averaged" is calculated by taking the arithmetic means of reading of all three depths.
2. For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.
3. For turbidity, SS, non-compliance of the water quality limits occurs when monitoring result is higher than the limits.
4. All the figures given in the table are used for reference only and the EPD may amend the figures whenever it is considered as necessary.
5. The 1%-ile of baseline data for dissolved oxygen (surface and middle) and dissolved oxygen (bottom) are 4.2mg/L and 3.6mg/L respectively.

4.2.3 If exceedance(s) at these stations is/are recorded by the ET of the Contract or referred by the other ET under the HZMB project to the Contract, the ET of the Contract will carry out an investigation and findings will be reported in the monthly EM&A Report.

4.3 Monitoring Result

4.3.1 The monitoring results for the monitoring stations showed in **Table 4.1** are reported in the monthly EM&A Report prepared for Contract No. HY/2010/02. There was two Action Level exceedance of SS at station IS8 and SR7 during mid-flood tide recorded on 06 February 2017 and 15 February 2017, one Action Level exceedances of SS at station SR6 during mid-ebb tide recorded on 10 February 2017.

4.3.2 The three exceedances were not relevant to this Contract since there was no marine works or barge of this Contract worked at HKBCF reclamation site near the sea area or area near the monitoring station IS8 and SR7 from 04 February 2017 to 06 February 2017 and 13 February 2017 to 15 February 2017 which was unlikely to generate suspended solids in the marine water. Besides, during 08 February 2017 to 10 February 2017, there was no marine works worked at HKBCF reclamation site near the sea area or area near the monitoring station SR6 except only one marine pre-cast segment delivery barge which passed through the north-east side with distance more than 4000 meters from the monitoring station SR6. Therefore, it is unlikely that the SS exceedances recorded at IS8 and SR7 during mid-flood tide on 06 February 2017 and 15 February 2017 and SR6 during mid-flood tide on 10 February 2017 were contributed by the works under Contract No. HY/2013/02. The water quality mitigation measures as mentioned in EM&A Manual and EP was fully implemented in this Contract which including maintenance of the silt curtain on a daily basis by Contract No. HY/2010/02 etc. Hence, the exceedances were considered as non-Project related.

4.3.3 After investigation, there was concluded that the exceedances were not relevant to this Contract due to the above mentioned reasons. The Investigation Reports No. 011, 012 and 013 (including the causes of exceedance, action taken and recommendation for mitigation) for Action or Limit Level Non-compliance were provided in **Appendix J.** There was no Action and Limit Level exceedance recorded on other date at the monitoring stations showed in **Table 4.1** by the Environmental Team of Contract No. HY/2010/02 during the reporting period.

4.3.4 Although the exceedance was not relevant to this Contract, the Contractor was reminded to ensure that the maintenance of perimeter silt curtains with respect to the work boundary of this Contract carried out by the Contractor of Contract No. HY/2010/02 is maintained properly.

5 DOLPHIN MONITORING

5.1 Monitoring Locations

The dolphin monitoring works for the Contract are covered by Contract No. HY/2010/02 Hong Kong-Zhuhai-Macao Bridge HKBCF – Reclamation Works. The ET of the Contract or another ET of the HZMB project is required to conduct dolphin monitoring at 23 transects as part of EM&A programme if these transects are no longer covered under Contract No. HY/2010/02. The dolphin monitoring should adopt line-transect vessel survey method. The survey follows pre-set and fixed transect lines in the two areas defined by AFCD as: Northeast Lantau survey area; and Northwest Lantau survey area. **Figure 3** shows the co-ordinates for the transect lines and layout map.

Remarks:
The ET of this Contract should conduct impact dolphin monitoring as part of EM&A programme according to latest notification from ENPO when the monitoring transect(s) is/are no longer covered by another ET of the HZMB project.

5.2 Monitoring Requirements

The monitoring requirements, monitoring equipment, monitoring parameters, frequency and duration, monitoring methodology, monitoring schedule, meteorological information are detailed in the monthly EM&A Reports prepared for Contract No. HY/2010/02.

5.2.1 The event and action plan is provided in **Appendix D**.

5.2.2 The Action and Limit Levels for Chinese White Dolphin Monitoring are provided in **Table 5.1a & Table 5.1b**

Table 5.1a Action and Limit Levels for Chinese White Dolphin Monitoring – Approach to Define Action Level (AL) and Limit Level (LL)

	North Lantau Social Cluster	
	NEL	**NWL**
Action Level	(STG < 70% of baseline) & (ANI < 70% of baseline)	(STG < 70% of baseline) & (ANI < 70% of baseline)
Limit Level	[(STG < 40% of baseline) & (ANI < 40% of baseline)] AND [(STG < 40% of baseline) & (ANI < 40% of baseline)]	

For North Lantau Social Cluster, action level will be trigger if either NEL or NWL fall below the criteria; limit level will be triggered if both NEL and NWL fall below the criteria.

Table 5.1b Derived Value of Action Level (AL) and Limit Level (LL) for Chinese White Dolphin Monitoring

	North Lantau Social Cluster	
	NEL	**NWL**
Action Level	(STG < 4.2) & (ANI < 15.5)	(STG < 6.9) & (ANI < 31.3)
Limit Level	[(STG < 2.4) & (ANI < 8.9)] AND [(STG < 3.9) & (ANI < 17.9)]	

5.2.3 If exceedance(s) at these transects is/are recorded by the ET of the Contract or referred by the other ET under the HZMB project to the Contract, the ET of the Contract will carry out an investigation and findings will be reported in the monthly EM&A Report.

5.3 Monitoring Result

The dolphin survey results for all transects are reported in the monthly EM&A Reports prepared for Contract No. HY/2010/02.

6 ENVIRONMENTAL SITE INSPECTION AND AUDIT

6. 1 Site Inspection

6.1.1 Site Inspections were carried out on a weekly basis to monitor the implementation of proper environmental pollution control mitigation measures for the project. During the reporting period, site inspections were carried out on 02, 09, 16 & 23 February 2017.

6.1.2 Particular observations during the site inspections are described below:

26 January 2017

(a) Chemical container without drip tray was observed at Portion C. Chemical container was removed at Portion C. The observation was closed on 02 February 2017.

(b) Improper disposal of general refuse was observed at Portion A. The general refuse was collected at Portion A. The observation was closed on 02 February 2017.

02 February 2017

(a) Improper disposal of general refuse was observed at Portion A. The general refuse was collected at Portion A. The observation was closed on 09 February 2017.

(b) NRMM labels were missing on two excavators at Portion D. NRMM labels were provided on two excavators at Portion D. The observation was closed on 09 February 2017.

09 February 2017

(a) Improper disposal of general refuse was observed at Portion C. The general refuse was sorted at Portion C. The observation was closed on 16 February 2017.

(b) Bentonite bags without impervious cover were observed at Portion C. Impervious cover was provided to cover the bentonite bags at Portion C. The observation was closed on 16 February 2017.

16 February 2017

(a) Improper disposal of general refuse was observed at Portion C. The general refuse was collected at Portion C. The observation was closed on 23 February 2017.

23 February 2017

(a) Oil containers without drip tray were observed at Portion C. Follow-actions for outstanding observation will be inspected during the next site inspection.

(b) General refuse mixed with C & D materials disposed improperly was observed at Portion C. Follow-actions for outstanding observation will be inspected during the next site inspection.

(c) General refuse and C & D materials disposed improperly was observed at Portion A. Follow-actions for outstanding observation will be inspected during the next site inspection.

6. 2 Advice on the Solid and Liquid Waste Management Status

6.2.1 The Contractor registered as a chemical waste producer for the Contract. Sufficient numbers of receptacles were available for general refuse collection and sorting.

6.2.2 There were 88 m^3 excavated marine sediment generated in this reporting period. The excavated marine sediment was stored properly on site during this reporting period until further instruction by the Engineer. The disposal of excavated sediment as per EP-353/2009/K to be implemented subject to confirmation.

6.2.3 Disposal of Marine Sediment

6.2.3.1 For the marine sediment disposal, after the acceptance of the review of the approved Sediment Quality Report (SQR) for this Project under EPD letter dated 19 August 2015, an approval to dispose the marine sediment extracted from bored piling for this Project was then approved under memo from Secretary, Marine Fill Committee of CEDD dated 20 August 2015 for the disposal of marine sediment extracted from bored piling works. The disposal sites allocated to this Project are the Mud Pit CMP2 of the Confined Marine Sediment Disposal Facility to the South of The Brothers (or at the East of Sha Chau). As advised by CEDD in the memo dated 19 February 2016, from 00:00 on 22 March 2016

onward, the disposal space at CMP2 of the South of The Brothers is closed and all disposal of contaminated sediment is to be carried out at CMP Vd to the East of Sha Chau (ESC). As a practical means, the disposal operation is managed by one contractor who is also responsible for applying dumping permit and its subsequent extension applications from EPD. Contract No. HY/2013/03 has been assigned to coordinate and arrange for disposal of extracted marine sediment from Contract No. HY/2013/02, HY/2013/03 and HY/2013/04.

6.2.3.2 For the dumping arrangement, the barge for disposal of marine sediment will moor at the temporary loading and unloading at the east shore of the HKBCF Island, which has been being used by contractor Contract No. HY/2010/02 for reclamation activities. In terms of safety consideration and to avoid mixing of sediment between contracts, each dumping date will be allocated to one Contract. The quantity of marine sediment disposed on each date is from one Contract.

6.2.3.3 During dumping, HY/2013/02 is responsible for transporting the marine sediment from his site area to the barge by Land transportation. The estimated quantity of marine sediment in each truck is confirmed by Resident Site Staff of each Contract. The trip tickets for transportation and disposal of marine sediment are collected and checked. Contract No. HY/2013/03 as the dumping permit holder is responsible for reporting to EPD the quantity disposed of as the condition stipulated in the dumping permit.

6.2.4 There were 88 m^3 marine sediment extracted from bored piling in this Contract disposed to allocated dumping site via Contract No. HY/2013/03 in this reporting period. The quantity disposed up to end of February 2017 was 18608 m^3. The Monthly Summary of Marine sediment disposed to dumping site was provided in **Appendix E** and **Table 6.1**.

Table 6.1 Summary of marine sediment disposed to dumping site via Contract No. HY/2013/03

Month/Year	Quantity disposed (m^3)
January 2016	1272
February 2016	2816
March 2016	600
April 2016	5128
May 2016	0
June 2016	1200
July 2016	728
August 2016	1784
September 2016	2328
October 2016	1096
November 2016	0
December 2016	1568
January 2017	0
February 2017	88
Total =	18608

6.2.5 The Contractor shall ensure no spilling and overflowing of materials during loading / unloading / transportation is allowed.

6.2.6 The monthly summary of waste flow table is detailed in **Appendix E**.

6.2.7 The Contractor was reminded that chemical waste containers should be properly treated and stored temporarily in designated chemical waste storage area on site in accordance with the Code of Practice on the Packing, Labelling and Storage of Chemical Waste.

6.3 Environmental Licenses and Permits

The valid environmental licenses and permits during the reporting period are summarized in **Appendix F**.

6.4 Implementation Status of Environmental Mitigation Measures

6.4.1 In response to the site audit findings, the Contractor carried out corrective actions.

6.4.2 The Contractor waters 8 times per day on all exposed soil within the project site and associated works areas when construction activities are being undertaken.

6.4.3 The Contractor was reminded to provide well-maintained plant operated on-site and plant served regularly;

6.4.4 The Contractor was reminded to switch off vehicles and equipment while not in use;

6.4.5 The Contractor was reminded to schedule the construction works to minimize noise nuisance etc.

6.4.6 The implementation status of Regular Marine Travel Route Plan (RMTRP) was checked by ET. Training material of Regular Marine Travel Route Plan was prepared and given to relevant staff. Those records were kept properly. Since the marine delivery of precast segments was commenced and the RMTRP training was provided for the Captain on 21 July 2016, the Captain was reminded to use regular travel routes in order to minimize the chance of vessel collision and the routes would not go through the dolphin hotspot in Brothers Islands. The marine traffic records and geographical plots of all the vessels tracks to demonstrate the conformance of the vessel to the proposed route in February 2017 would be provided to ER, ETL, IEC/ENPO for checking within the month of March 2017.

6.4.7 The tool box training of dolphin was carried out in Dec 2015. According to the action plan and communication flow chart of dolphin instruction, if any dolphin intruded BCF perimeter silt curtain, ETL should be informed. There was no notification received on any dolphin intrusion during the reporting period.

6.4.8 A summary of the implementation Schedule of Environmental Mitigation Measures (EMIS) is presented in **Appendix G**. Most of the necessary mitigation measures were implemented properly.

6.5 Summary of Exceedance of the Environmental Quality Performance Limit

6.5.1 Summary of Action and Limit Level exceedance of 1-hr TSP level and 24-hr TSP level at AMS6 shall be referred to the monthly EM&A report prepared by Contract No. HY/2011/03.

6.5.2 There was no Action and Limit Level exceedance of 1-hr TSP level and 24-hr TSP level recorded at station AMS7 by the Environmental Team of Contract No. HY/2010/02 during the reporting period.

6.5.3 There was no Action and Limit Level exceedance for noise recorded at station NMS2 and station NMS3B by the Environmental Team of Contract No. HY/2010/02 during the reporting period.

6.5.4 There were two Action Level exceedances of SS on impact water quality monitoring at station IS8 and SR7 during mid-flood tide recorded on 06 February 2017 and 15 February 2017, one Action Level exceedance of SS on impact water quality monitoring at station SR6 during mid-ebb tide recorded on 10 February 2017. After investigation, there was concluded that the three exceedances were not relevant to this Contract since there was no marine works or barge of this Contract worked at HKBCF reclamation site near the sea area or area near the monitoring station IS8 and SR7 from 04 February 2017 to 06 February 2017 and 13 February 2017 to 15 February 2017 which was unlikely to generate suspended solids in the marine water. Besides, during 08 February 2017 to 10 February 2017, there was no marine works worked at HKBCF reclamation site near the sea area or area near the monitoring station SR6 except only one marine pre-cast segment delivery barge passed through the north-east side with distance more than 4000 meters from the monitoring station SR6. Therefore, it is unlikely that the SS exceedances recorded at IS8 and SR7 during mid-flood tide on 06 February 2017 and 15 February 2017 and SR6 during mid-flood tide on 10 February 2017 were contributed by the works under Contract No. HY/2013/02. The Investigation Reports No. 011, 012 and 013 (including the causes of exceedance, action taken and recommendation for mitigation) for Action or Limit Level Non-compliance were provided in **Appendix J**. There was no Action and Limit Level exceedance recorded on other monitoring date at the monitoring stations showed at **Table 4.1** by the Environmental Team of Contract No. HY/2010/02 during the reporting period. Although the exceedances were not relevant

to this Contract, the Contractor was reminded to ensure that the maintenance of perimeter silt curtains with respect to the work boundary of this Contract carried out by the Contractor of Contract No. HY/2010/02 is maintained properly.

6.5.5 Impact dolphin monitoring results at all transects are reported in the EM&A Reports prepared for Contract No. HY/2010/02.

6.6 Summary of Complaints, Notification of Summons and Successful Prosecution

6.6.1 There were no complaints received during the reporting period.

6.6.2 There were no notifications of summons or prosecutions received during the reporting period.

6.6.3 Statistics on environmental complaints, notifications of summons and successful prosecutions are summarized in **Appendix H.**

7 FUTURE KEY ISSUES

7.1 Construction Programme for the Coming Months

7.1.1 As informed by the Contractor, the major construction activities for March 2017 are summarized in **Table 7.1**.

Table 7.1 Construction Activities for Coming Month

Site Area	Description of Activities
Portion C	Bored Piling
Portion C & F	Pier / Abutment
	Pile Cap
	Pre-bored H-pile for sign gantries
Portion D, A, E, C & F	Marine delivery of precast segment & Construction of bridge deck
	Footing construction of directional signs and dust laying
	Storm drain and water main construction
	Retaining wall, slop and earth works
	Marine sediment excavation activities from the land-based works and corresponding disposal at the designated disposal sites

7.2 Environmental Site Inspection Schedule for the Coming Month

7.2.1 The tentative schedule for weekly site inspections for March 2017 is provided in **Appendix I**.

8 CONCLUSION

8.1 Conclusions

8.1.1 The site preparation work of the Contract was started on 25 July 2014 and the construction works of the Contract commenced on 24 November 2014.

8.1.2 Summary of Action and Limit Level exceedance of 1-hr TSP level and 24-hr TSP level at AMS6 shall be referred to the monthly EM&A report prepared by Contract No. HY/2011/03.

8.1.3 There was no Action and Limit Level exceedance of 1-hr TSP level and 24-hr TSP level recorded at station AMS7 by the Environmental Team of Contract No. HY/2010/02 during the reporting period.

8.1.4 There was no Action and Limit Level exceedance for noise recorded at station NMS2 and station NMS3B by the Environmental Team of Contract No. HY/2010/02 during the reporting period.

8.1.5 There were two Action Level exceedances of SS on impact water quality monitoring at station IS8 and SR7 during mid-flood tide recorded on 06 February 2017 and 15 February 2017, one Action Level exceedance of SS on impact water quality monitoring at station SR6 during mid-ebb tide recorded on

10 February 2017. After investigation, there was concluded that the three exceedances were not relevant to this Contract since there was no marine works or barge of this Contract worked at HKBCF reclamation site near the sea area or area near the monitoring station IS8 and SR7 from 04 February 2017 to 06 February 2017 and 13 February 2017 to 15 February 2017 which was unlikely to generate suspended solids in the marine water. Besides, during 08 February 2017 to 10 February 2017, there was no marine works worked at HKBCF reclamation site near the sea area or area near the monitoring station SR6 except only one marine pre-cast segment delivery barge passed through the north-east side with distance more than 4000 meters from the monitoring station SR6. Therefore, it is unlikely that the SS exceedances recorded at IS8 and SR7 during mid-flood tide on 06 February 2017 and 15 February 2017 and SR6 during mid-flood tide on 10 February 2017 were contributed by the works under Contract No. HY/2013/02. The Investigation Reports No. 011, 012 and 013 (including the causes of exceedance, action taken and recommendation for mitigation) for Action or Limit Level Non-compliance were provided in **Appendix J**. Although the exceedance was not relevant to this Contract, the Contractor was reminded to ensure that maintenance of perimeter silt curtains with respect to the work boundary of this Contract carried out by the Contractor of Contract No. HY/2010/02 is maintained properly.

8.1.6 Impact dolphin monitoring results at all transects are reported in the EM&A Reports prepared for Contract No. HY/2010/02.

8.1.7 There were no complaints received during the reporting period.

8.1.8 There were no notifications of summons or prosecutions received during the reporting period.

- END OF REPORT -

FIGURES

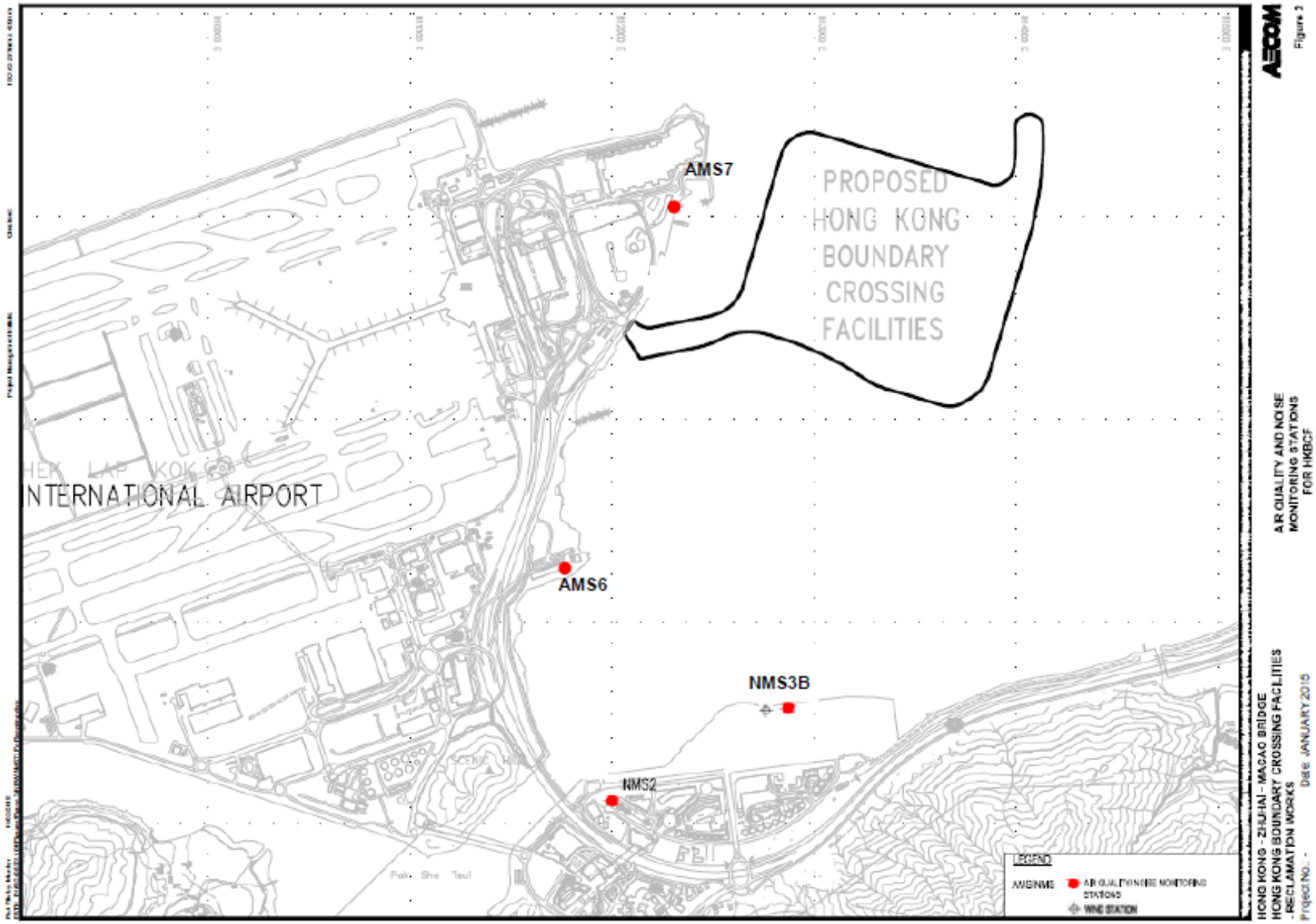
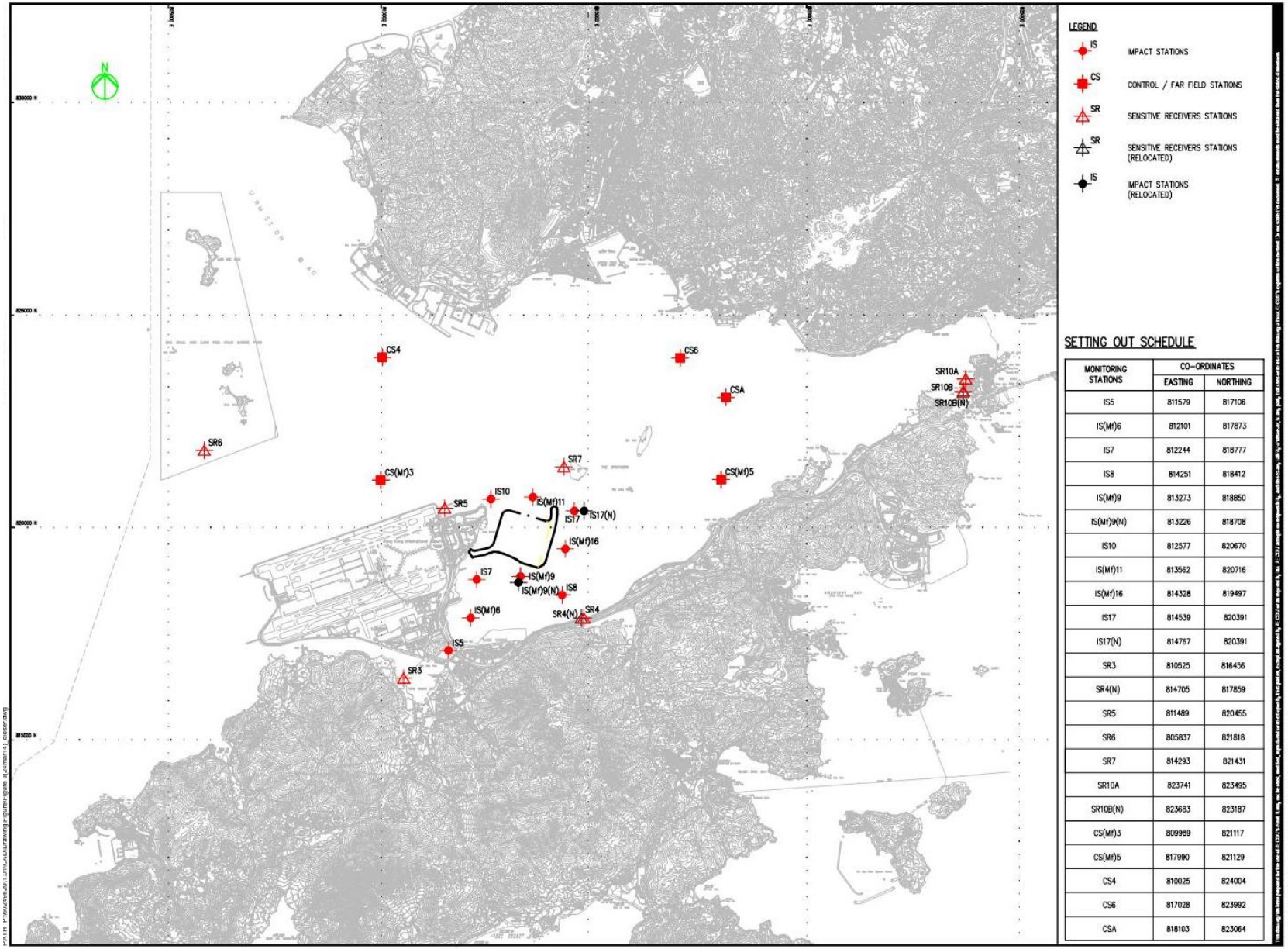


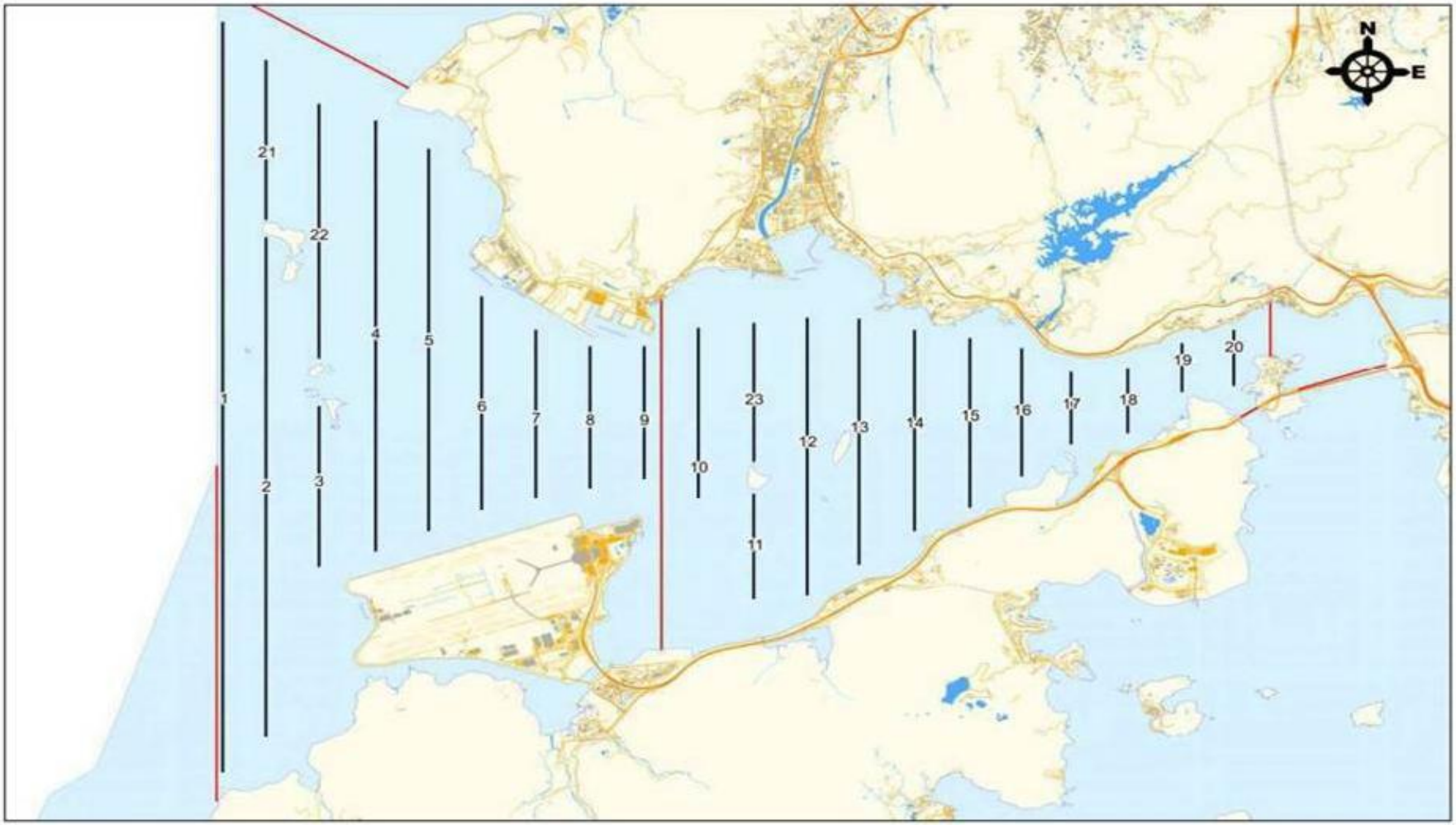
Figure 1 Air Quality and Noise Monitoring Stations for HKBCF



SETTING OUT SCHEDULE

MONITORING STATIONS	CO-ORDINATES	
	EASTING	NORTHING
IS5	811579	817106
IS(Mf)6	812101	817873
IS7	812244	818777
IS8	814251	818412
IS(Mf)9	813273	818850
IS(Mf)9(N)	813226	818708
IS10	812577	820670
IS(Mf)11	813562	820716
IS(Mf)16	814328	819497
IS17	814539	820391
IS17(N)	814767	820391
SR3	810525	816456
SR4(N)	814705	817859
SR5	811489	820455
SR6	805837	821818
SR7	814293	821431
SR10A	823741	823495
SR10B(N)	823683	823187
CS(Mf)3	809989	821117
CS(Mf)5	817990	821129
CS4	810025	824004
CS6	817028	823992
CSA	818103	823064

Figure 2 Water Quality Monitoring Stations (construction phases)



Remarks:

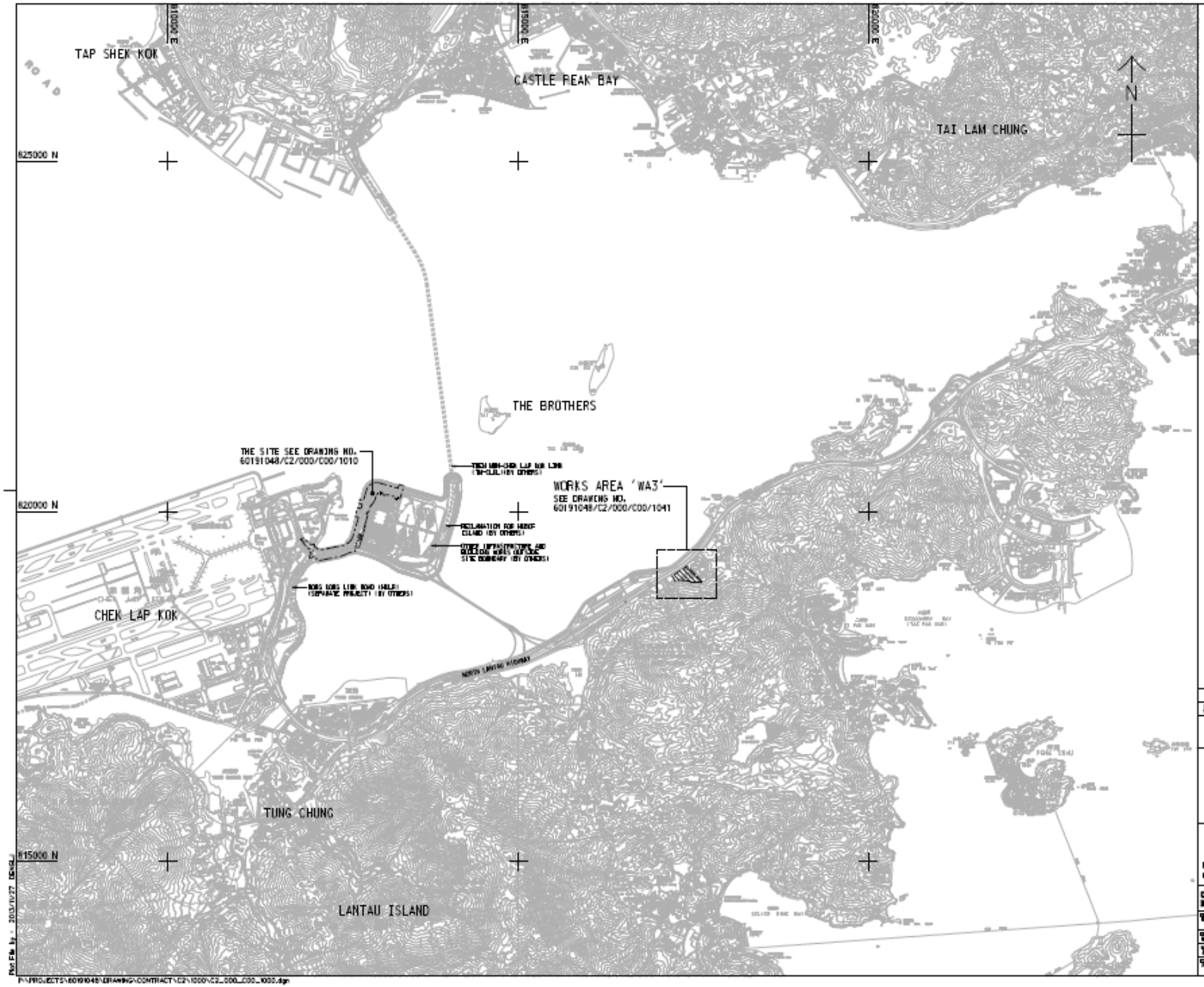
***Transect 10 is now 3.6km in length due to the HKBCF construction site.**

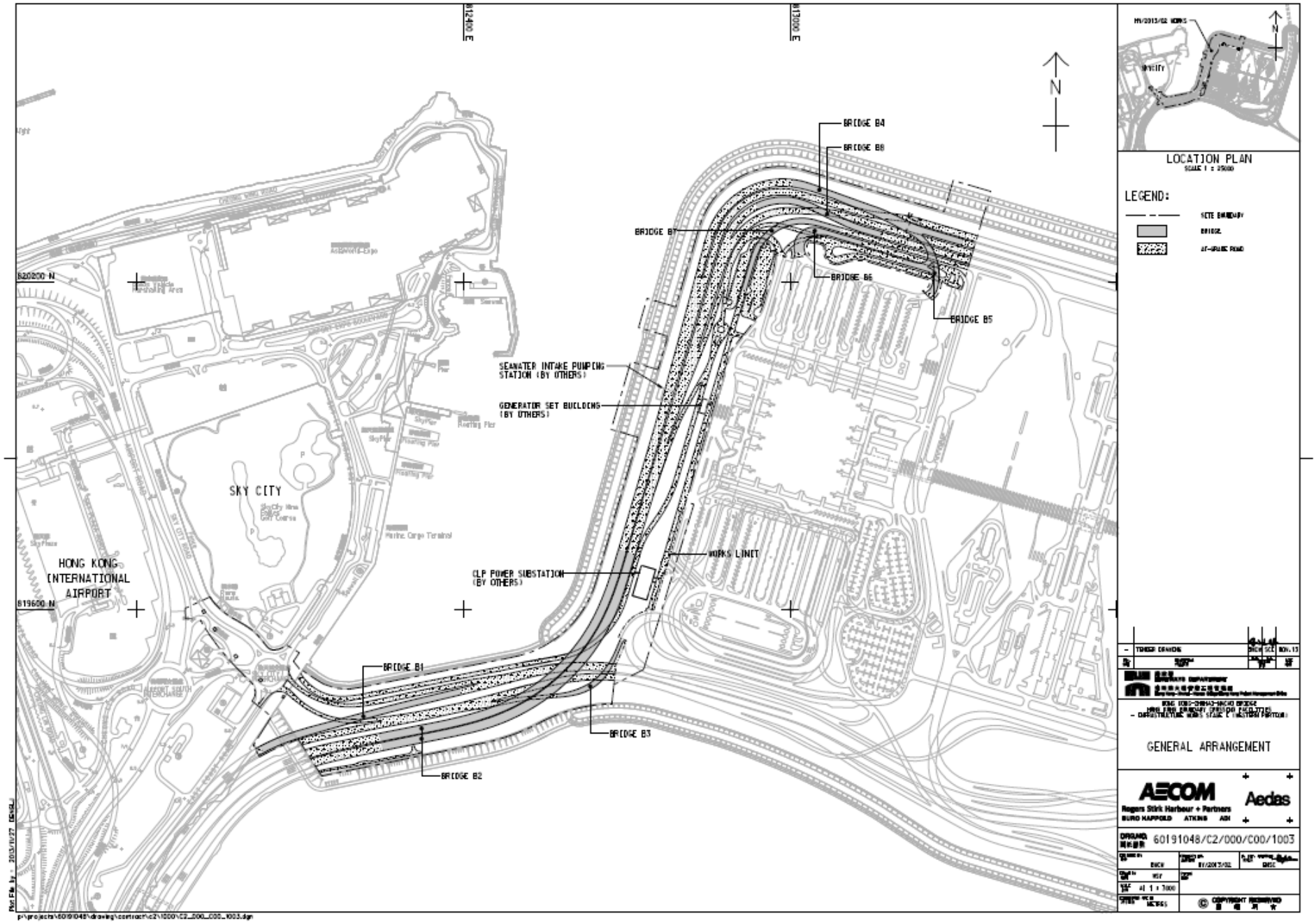
^Coordinates for transect lines 1, 2, 7, 8, 9 and 11 have been updated in respect to the Proposal for Alteration of Transect Line for Dolphin Monitoring approved by EPD on 19 August 2015. The total transect length for both NEL and NWL combined is 108km.

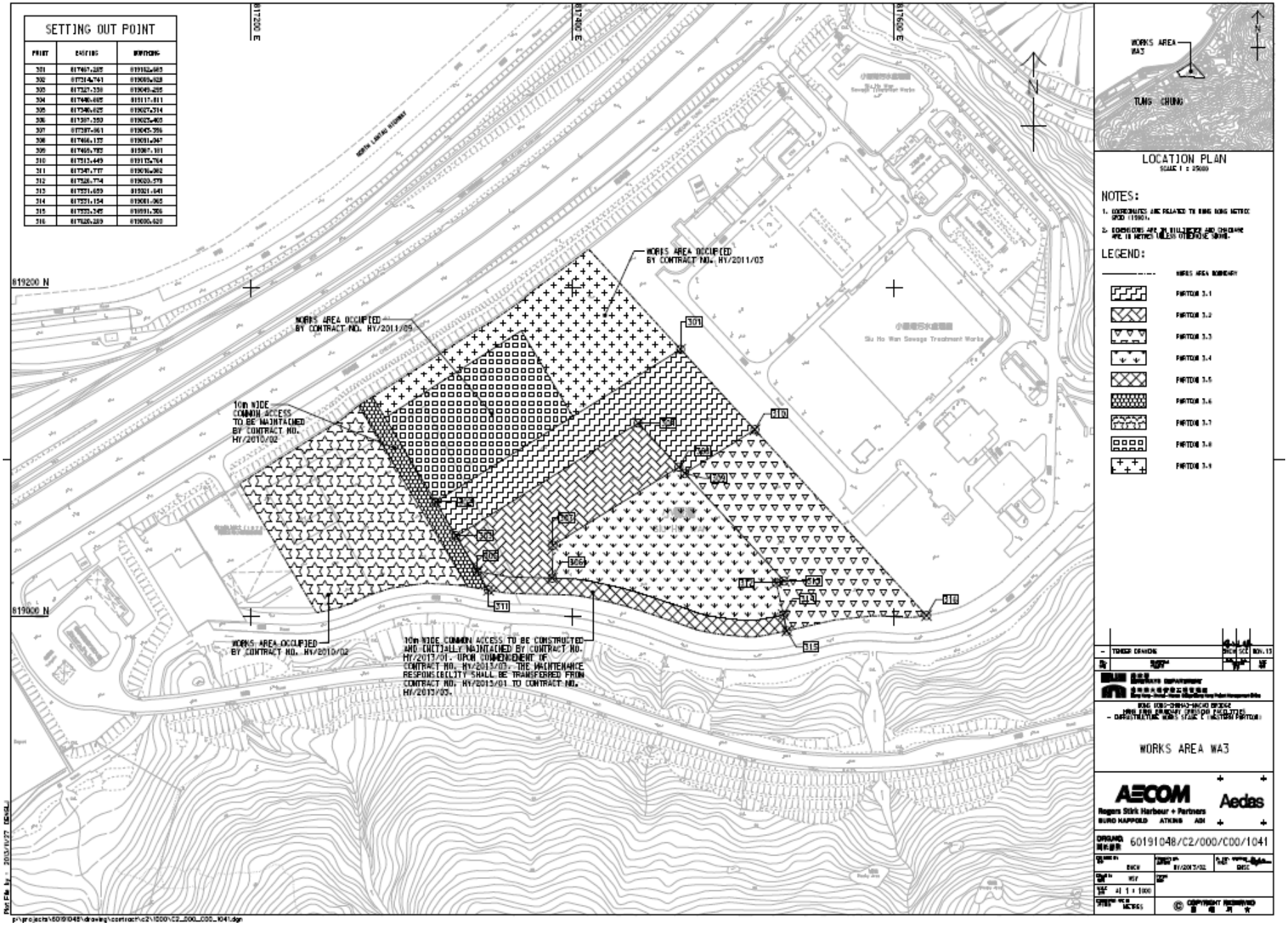
Figure 3 Dolphin Monitoring Transect Line and Layout Map

Appendix A

Location of Works Areas

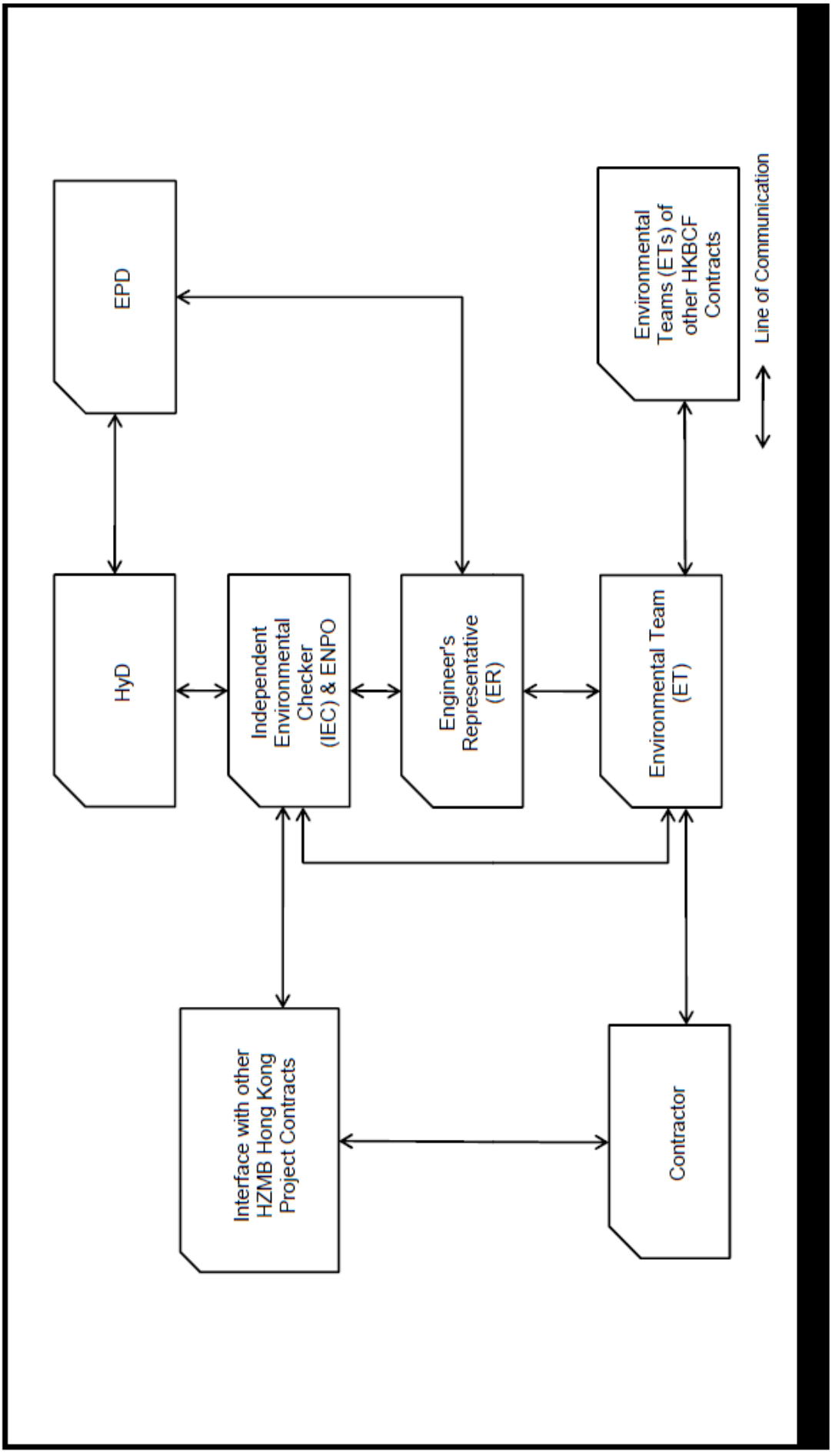






Appendix B

Project Organization for Environmental Works

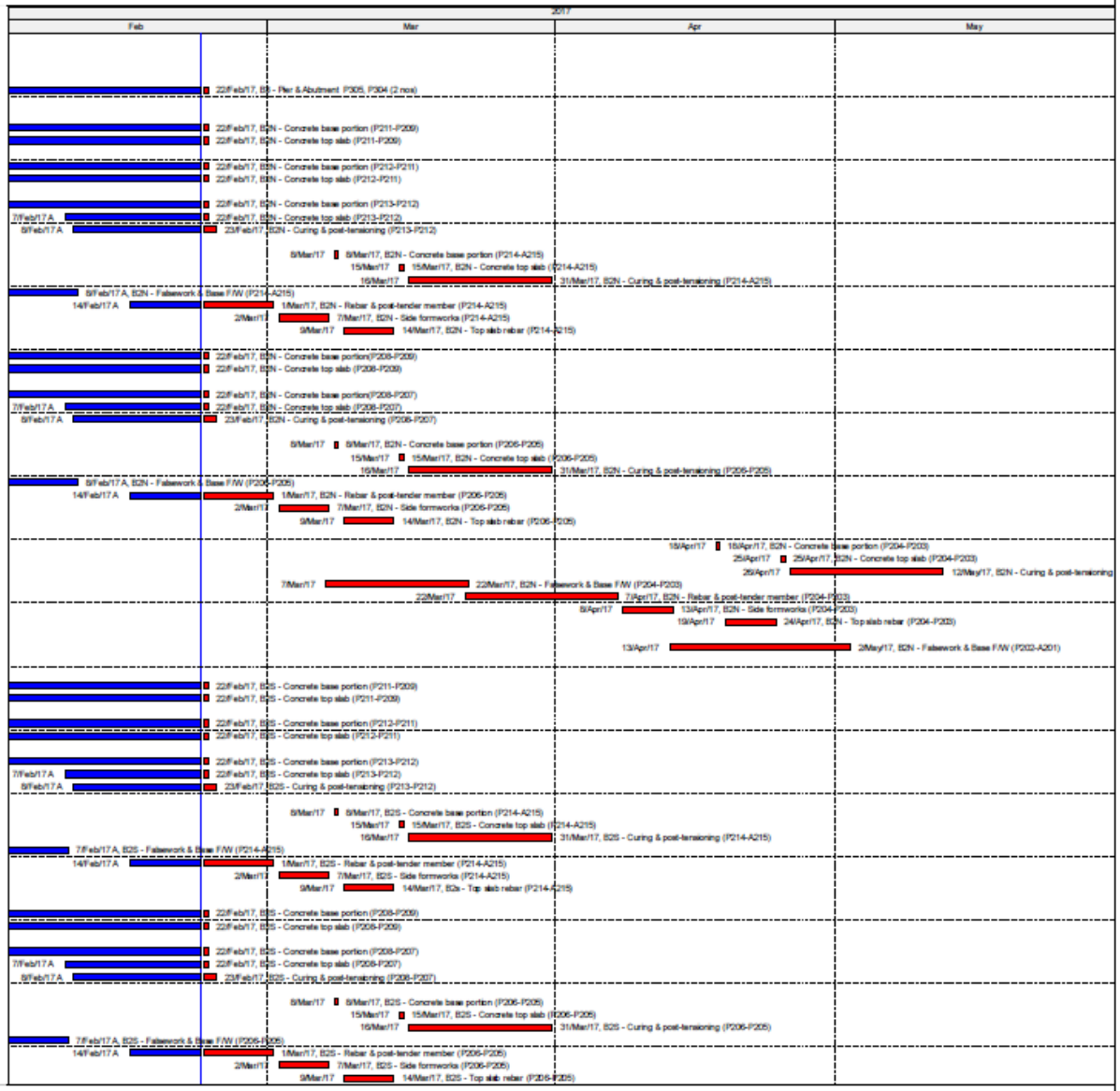

EPD
HyD
Independent Environmental Checker (IEC) & ENPO
Engineer's Representative (ER)
Environmental Team (ET)
Environmental Teams (ETs) of other HKBCF Contracts
Line of Communication
Interface with other HZMB Hong Kong Project Contracts
Contractor

Appendix C

Construction Programme

HKBCF Infrastructure (Western Portion) - Monthly Progress 31 - Three Month Rolling Programme

Activity ID	Activity Name	Original Duration	% Comp
HKBCF Infrastructure (Western Portion) - Monthly Progress 31			
Bridge Structure			
Bridge 3			
Pier & Abutment			
B3-0050	B3 - Pier & Abutment P305, P304 (2 nos)	14	100%
Bridge 2H			
Deck 1 (P211-P209)			
B2-0330	B2N - Concrete base portion (P211-P209)	1	100%
B2-0350	B2N - Concrete top slab (P211-P209)	1	100%
Deck 2 (P213-P211)			
B2-1950	B2N - Concrete base portion (P212-P211)	1	0%
B2-1970	B2N - Concrete top slab (P212-P211)	1	0%
Deck 3 (P213-P212)			
B2-0430	B2N - Concrete base portion (P213-P212)	1	100%
B2-0450	B2N - Concrete top slab (P213-P212)	1	100%
B2-0460	B2N - Curing & post-tensioning (P213-P212)	14	100%
Deck 4 (P214-A215)			
B2-0530	B2N - Concrete base portion (P214-A215)	1	100%
B2-0550	B2N - Concrete top slab (P214-A215)	1	100%
B2-0560	B2N - Curing & post-tensioning (P214-A215)	14	100%
B2-0500	B2N - Falsework & Base F/W (P214-A215)	14	100%
B2-0510	B2N - Rebar & post-tender member (P214-A215)	14	100%
B2-0520	B2N - Side formworks (P214-A215)	5	100%
B2-0540	B2N - Top slab rebar (P214-A215)	5	100%
Deck 5 (P208-P209)			
B2-2020	B2N - Concrete base portion(P208-P209)	1	0%
B2-2040	B2N - Concrete top slab (P208-P209)	1	0%
Deck 6 (P208-P207)			
B2-0630	B2N - Concrete base portion(P208-P207)	1	100%
B2-0650	B2N - Concrete top slab (P208-P207)	1	100%
B2-0660	B2N - Curing & post-tensioning (P208-P207)	14	100%
Deck 7 (P206-P205)			
B2-0730	B2N - Concrete base portion (P206-P205)	1	100%
B2-0750	B2N - Concrete top slab (P206-P205)	1	100%
B2-0760	B2N - Curing & post-tensioning (P206-P205)	14	100%
B2-0700	B2N - Falsework & Base F/W (P206-P205)	14	100%
B2-0710	B2N - Rebar & post-tender member (P206-P205)	14	100%
B2-0720	B2N - Side formworks (P206-P205)	5	100%
B2-0740	B2N - Top slab rebar (P206-P205)	5	100%
Deck 8 (P204-P203)			
B2-0830	B2N - Concrete base portion (P204-P203)	1	100%
B2-0850	B2N - Concrete top slab (P204-P203)	1	100%
B2-0860	B2N - Curing & post-tensioning (P204-P203)	14	100%
B2-0800	B2N - Falsework & Base F/W (P204-P203)	14	100%
B2-0810	B2N - Rebar & post-tender member (P204-P203)	14	100%
B2-0820	B2N - Side formworks (P204-P203)	5	100%
B2-0840	B2N - Top slab rebar (P204-P203)	5	100%
Deck 9 (P202-A201)			
B2-0900	B2N - Falsework & Base F/W (P202-A201)	14	100%
Bridge 2S			
Deck 1 (P211-P209)			
B2-1200	B2S - Concrete base portion (P211-P209)	1	100%
B2-1220	B2S - Concrete top slab (P211-P209)	1	100%
Deck 2 (P212-P211)			
B2-2090	B2S - Concrete base portion (P212-P211)	1	0%
B2-2110	B2S - Concrete top slab (P212-P211)	1	0%
Deck 3 (P213-P212)			
B2-1270	B2S - Concrete base portion (P213-P212)	1	100%
B2-1290	B2S - Concrete top slab (P213-P212)	1	100%
B2-1300	B2S - Curing & post-tensioning (P213-P212)	14	100%
Deck 4 (P214-A215)			
B2-1340	B2S - Concrete base portion (P214-A215)	1	100%
B2-1360	B2S - Concrete top slab (P214-A215)	1	100%
B2-1370	B2S - Curing & post-tensioning (P214-A215)	14	100%
B2-1310	B2S - Falsework & Base F/W (P214-A215)	14	100%
B2-1320	B2S - Rebar & post-tender member (P214-A215)	14	100%
B2-1330	B2S - Side formworks (P214-A215)	5	100%
B2-1350	B2s - Top slab rebar (P214-A215)	5	100%
Deck 5 (P208-P209)			
B2-2150	B2S - Concrete base portion (P208-P209)	1	0%
B2-2180	B2S - Concrete top slab (P208-P209)	1	0%
Deck 6 (P208-P207)			
B2-1410	B2S - Concrete base portion (P208-P207)	1	100%
B2-1430	B2S - Concrete top slab (P208-P207)	1	100%
B2-1440	B2S - Curing & post-tensioning (P208-P207)	14	100%
Deck 7 (P206-P205)			
B2-1480	B2S - Concrete base portion (P206-P205)	1	100%
B2-1500	B2S - Concrete top slab (P206-P205)	1	100%
B2-1510	B2S - Curing & post-tensioning (P206-P205)	14	100%
B2-1450	B2S - Falsework & Base F/W (P206-P205)	14	100%
B2-1460	B2S - Rebar & post-tender member (P206-P205)	14	100%
B2-1470	B2S - Side formworks (P206-P205)	5	100%
B2-1490	B2S - Top slab rebar (P206-P205)	5	100%

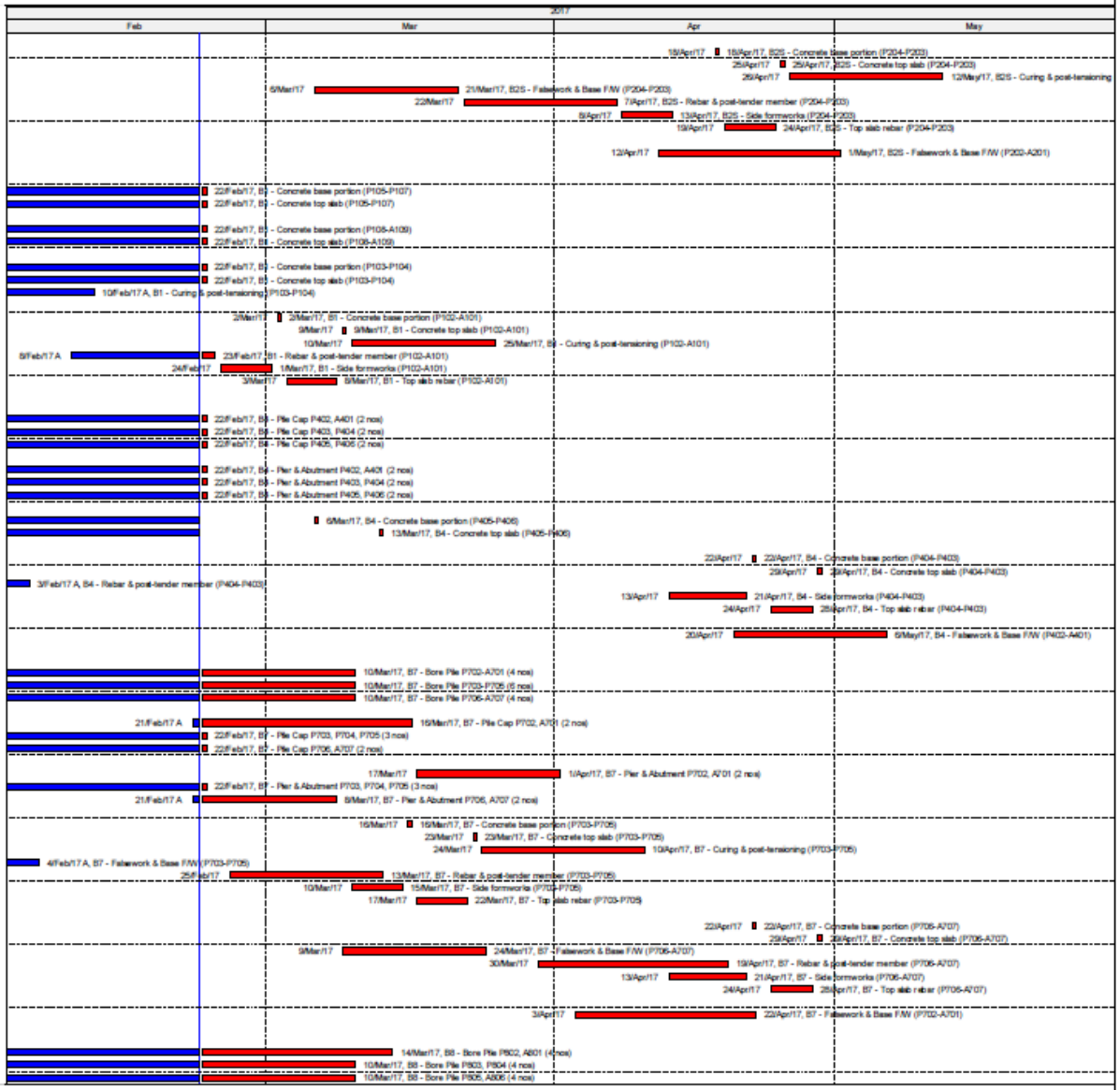


Remaining Level of Effort | Actual Work | Critical Remaining ...
Actual Level of Effort | Remaining Work | Milestone

Date	Revision	Checked	Approved
22/Feb/17	Monthly Progress 31		

HKBCF Infrastructure (Western Portion) - Monthly Progress 31 - Three Month Rolling Programme

Activity ID	Activity Name	Original Duration	% Comp.
Deck 8 (P204-P203)			
B2-1550	B2S - Concrete base portion (P204-P203)	1	100%
B2-1570	B2S - Concrete top slab (P204-P203)	1	100%
B2-1580	B2S - Curing & post-tensioning (P204-P203)	14	100%
B2-1520	B2S - Falsework & Base F/W (P204-P203)	14	100%
B2-1530	B2S - Rebar & post-tender member (P204-P203)	14	100%
B2-1540	B2S - Side formworks (P204-P203)	5	100%
B2-1560	B2S - Top slab rebar (P204-P203)	5	100%
Deck 9 (P202-A201)			
B2-1590	B2S - Falsework & Base F/W (P202-A201)	14	100%
Bridge 1			
Deck 1 (P105-P107)			
B1-0230	B1 - Concrete base portion (P105-P107)	1	100%
B1-0250	B1 - Concrete top slab (P105-P107)	1	100%
Deck 2 (P108-A109)			
B1-300	B1 - Concrete base portion (P108-A109)	1	100%
B1-330	B1 - Concrete top slab (P108-A109)	1	100%
Deck 3 (P103-P104)			
B1-370	B1 - Concrete base portion (P103-P104)	1	100%
B1-390	B1 - Concrete top slab (P103-P104)	1	100%
B1-400	B1 - Curing & post-tensioning (P103-P104)	14	100%
Deck 4b (P102-P103)			
B1-440	B1 - Concrete base portion (P102-A101)	1	100%
B1-460	B1 - Concrete top slab (P102-A101)	1	100%
B1-470	B1 - Curing & post-tensioning (P102-A101)	14	100%
B1-420	B1 - Rebar & post-tender member (P102-A101)	14	100%
B1-430	B1 - Side formworks (P102-A101)	5	100%
B1-450	B1 - Top slab rebar (P102-A101)	5	100%
Bridge 4			
Pile Cap			
B4-0060	B4 - Pile Cap P402, A401 (2 nos)	21	100%
B4-0050	B4 - Pile Cap P403, P404 (2 nos)	21	100%
B4-0040	B4 - Pile Cap P405, P406 (2 nos)	21	100%
Pier & Abutment			
B4-0090	B4 - Pier & Abutment P402, A401 (2 nos)	14	100%
B4-0080	B4 - Pier & Abutment P403, P404 (2 nos)	14	100%
B4-0070	B4 - Pier & Abutment P405, P406 (2 nos)	14	100%
Deck 1 (P405-P406)			
B4-130	B4 - Concrete base portion (P405-P406)	1	100%
B4-150	B4 - Concrete top slab (P405-P406)	1	100%
Deck 2 (P404-P403)			
B4-200	B4 - Concrete base portion (P404-P403)	1	100%
B4-220	B4 - Concrete top slab (P404-P403)	1	100%
B4-180	B4 - Rebar & post-tender member (P404-P403)	14	100%
B4-190	B4 - Side formworks (P404-P403)	5	100%
B4-210	B4 - Top slab rebar (P404-P403)	5	100%
Deck 3 (P402-A401)			
B4-240	B4 - Falsework & Base F/W (P402-A401)	14	100%
Bridge 7			
Bore Pile			
B7-1020	B7 - Bore Pile P702-A701 (4 nos)	63	100%
B7-1000	B7 - Bore Pile P703-P705 (5 nos)	63	100%
B7-1010	B7 - Bore Pile P706-A707 (4 nos)	63	100%
Pile Cap			
B7-1050	B7 - Pile Cap P702, A701 (2 nos)	21	100%
B7-1030	B7 - Pile Cap P703, P704, P705 (3 nos)	21	100%
B7-1040	B7 - Pile Cap P706, A707 (2 nos)	21	100%
Pier & Abutment			
B7-1080	B7 - Pier & Abutment P702, A701 (2 nos)	14	100%
B7-1060	B7 - Pier & Abutment P703, P704, P705 (3 nos)	14	100%
B7-1070	B7 - Pier & Abutment P706, A707 (2 nos)	14	100%
Deck 1 (P703-P705)			
B7-1120	B7 - Concrete base portion (P703-P705)	1	100%
B7-1140	B7 - Concrete top slab (P703-P705)	1	100%
B7-1150	B7 - Curing & post-tensioning (P703-P705)	14	100%
B7-1090	B7 - Falsework & Base F/W (P703-P705)	14	100%
B7-1100	B7 - Rebar & post-tender member (P703-P705)	14	100%
B7-1110	B7 - Side formworks (P703-P705)	5	100%
B7-1130	B7 - Top slab rebar (P703-P705)	5	100%
Deck 2 (P706-A707)			
B7-1190	B7 - Concrete base portion (P706-A707)	1	100%
B7-1210	B7 - Concrete top slab (P706-A707)	1	100%
B7-1160	B7 - Falsework & Base F/W (P706-A707)	14	100%
B7-1170	B7 - Rebar & post-tender member (P706-A707)	14	100%
B7-1180	B7 - Side formworks (P706-A707)	5	100%
B7-1200	B7 - Top slab rebar (P706-A707)	5	100%
Deck 3 (P702-A701)			
B7-1230	B7 - Falsework & Base F/W (P702-A701)	14	100%
Bridge 8			
Bore Pile			
B8-1020	B8 - Bore Pile P802, A801 (4 nos)	63	100%
B8-1000	B8 - Bore Pile P803, P804 (4 nos)	63	100%
B8-1010	B8 - Bore Pile P805, A806 (4 nos)	63	100%



Remaining Level of Effort | Actual Work | Critical Remaining ...
Actual Level of Effort | Remaining Work | Milestone

Date	Revision	Checked	Approved
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HKBCF Infrastructure (Western Portion) - Monthly Progress 31 - Three Month Rolling Programme

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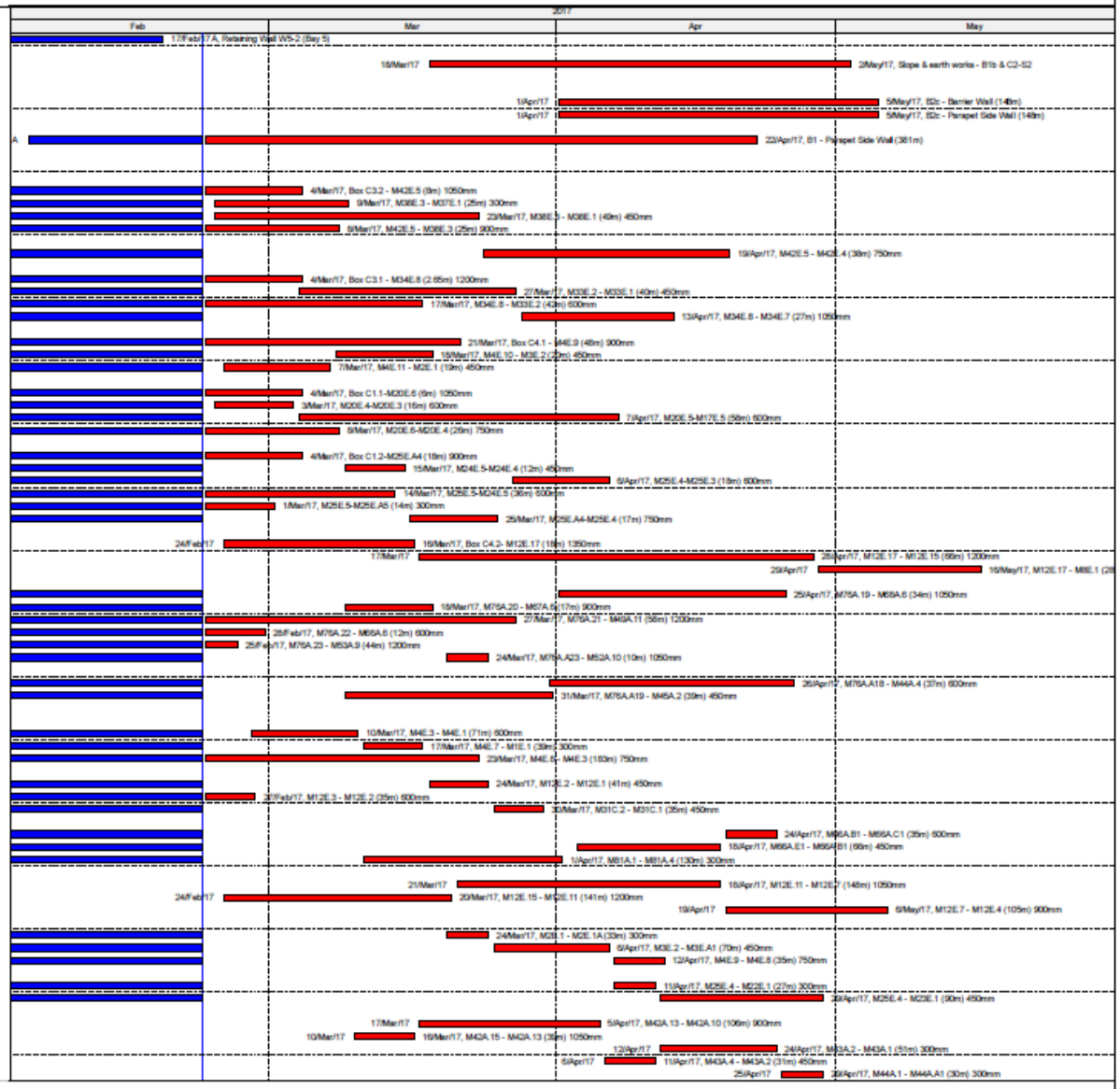
Activity ID	Activity Name	Original Duration	% Comp
B5-2150	Retaining Wall W5-2 (Bay 5)	21	100%
Slope & Earth Works at Bridge Abutment			
B2-1750	Slope & earth works - B1b & C2-S2	35	0%
Parapet & Barrier			
Bridge 2			
B2-1850	B2c - Barrier Wall (149m)	25	0%
B2-1840	B2c - Parapet Side Wall (149m)	25	0%
Bridge 1			
B1-0600	B1 - Parapet Side Wall (381m)	64	0%
Storm & Sewer Drainage Works			
Storm Drain below +1.3m (2m/day)			
D1(c) - culvert C3 near B1 end			
D1-0010	Box C3.2 - M42E.5 (9m) 1050mm	10	100%
D1-0030	M38E.3 - M37E.1 (25m) 300mm	13	100%
D1-0040	M38E.3 - M38E.1 (40m) 450mm	25	100%
D1-0020	M42E.5 - M38E.3 (25m) 900mm	13	100%
D2(c) - end of B1			
D1-0050	M42E.5 - M42E.4 (38m) 750mm	19	100%
D1(e) - between B1 & B2			
D1-0070	Box C3.1 - M34E.8 (2.65m) 1200mm	10	100%
D1-0085	M33E.2 - M33E.1 (40m) 450mm	20	0%
D1-0080	M34E.8 - M33E.2 (42m) 600mm	21	100%
D1-0090	M34E.8 - M34E.7 (27m) 1050mm	14	100%
D2(d) - to culvert C4			
D1-0120	Box C4.1 - M4E.9 (48m) 900mm	24	100%
D1-0140	M4E.10 - M3E.2 (20m) 450mm	10	100%
D1-0130	M4E.11 - M2E.1 (19m) 450mm	10	100%
D2(e) - site entrance			
D1-0150	Box C1.1-M20E.6 (6m) 1050mm	10	100%
D1-0180	M20E.4-M20E.3 (16m) 600mm	8	100%
D1-0190	M20E.5-M17E.5 (58m) 600mm	29	100%
D1-0170	M20E.6-M20E.4 (25m) 750mm	13	100%
D2(b) - next to HKLR			
D1-0250	Box C1.2-M25E.A4 (18m) 900mm	10	100%
D1-0280	M24E.5-M24E.4 (12m) 450mm	6	100%
D1-0295	M25E.4-M25E.3 (18m) 600mm	9	0%
D1-0270	M25E.5-M24E.5 (36m) 600mm	18	100%
D1-0260	M25E.5-M25E.A5 (14m) 300mm	7	100%
D1-0290	M25E.A4-M25E.4 (17m) 750mm	9	100%
D1(d) - Under B2 & to culvert C4			
D1-0350	Box C4.2- M12E.17 (18m) 1350mm	18	100%
D1-0360	M12E.17 - M12E.15 (99m) 1200mm	33	100%
D1-0370	M12E.17 - M8E.1 (28m) 300mm	14	100%
F(a) - Seawall Side			
D1-0530	M76A.19 - M68A.6 (34m) 1050mm	17	100%
D1-0520	M76A.20 - M67A.6 (17m) 900mm	9	100%
D1-0510	M76A.21 - M49A.11 (58m) 1200mm	29	100%
D1-0500	M76A.22 - M66A.6 (12m) 600mm	6	100%
D1-0490	M76A.23 - M53A.9 (44m) 1200mm	22	100%
D1-0525	M76A.A23 - M52A.10 (10m) 1050mm	5	0%
F(b) - from car park			
D1-0550	M76A.A18 - M44A.4 (37m) 600mm	19	100%
D1-0540	M76A.A19 - M45A.2 (39m) 450mm	20	100%
Storm Drain about +1.3m (7m/day)			
A(1) - seawall next to B2			
D2-0020	M4E.3 - M4E.1 (71m) 600mm	11	100%
D2-0600	M4E.7 - M1E.1 (39m) 300mm	6	100%
D2-0010	M4E.8 - M4E.3 (183m) 750mm	26	100%
B(1) - CLP to PCB			
D2-0060	M12E.2 - M12E.1 (41m) 450mm	6	100%
D2-0070	M12E.3 - M12E.2 (35m) 600mm	5	100%
D2-0090	M31C.2 - M31C.1 (35m) 450mm	5	100%
A(4) - after B2			
D2-0120	M66A.B1 - M66A.C1 (35m) 600mm	5	100%
D2-0110	M66A.E1 - M66A.B1 (66m) 450mm	10	100%
D2-0100	M61A.1 - M61A.4 (130m) 300mm	19	100%
A(2) - under B2			
D2-0250	M12E.11 - M12E.7 (148m) 1050mm	21	100%
D2-0240	M12E.15 - M12E.11 (141m) 1200mm	21	100%
D2-0260	M12E.7 - M12E.4 (105m) 900mm	15	100%
D2(d) - from A1 to culvert C4			
D2-0370	M3E.1 - M2E.1A (33m) 300mm	5	100%
D2-0360	M3E.2 - M3E.A1 (70m) 450mm	10	100%
D2-0385	M4E.9 - M4E.8 (35m) 750mm	5	0%
D2(2) - next to HKLR			
D2-0510	M25E.4 - M22E.1 (27m) 300mm	4	100%
D2-0513	M25E.4 - M23E.1 (90m) 450mm	13	0%
C1(1) - Car park			
D2-0660	M42A.13 - M42A.10 (106m) 900mm	16	100%
D2-0650	M42A.15 - M42A.13 (39m) 1050mm	6	100%
D2-0680	M43A.2 - M43A.1 (51m) 300mm	8	100%
D2-0670	M43A.4 - M43A.2 (31m) 450mm	5	100%
D2-0682	M44A.1 - M44A.A1 (30m) 300mm	5	0%



Remaining Level of Effort | Actual Work | Critical Remaining ...
Actual Level of Effort | Remaining Work | Milestone

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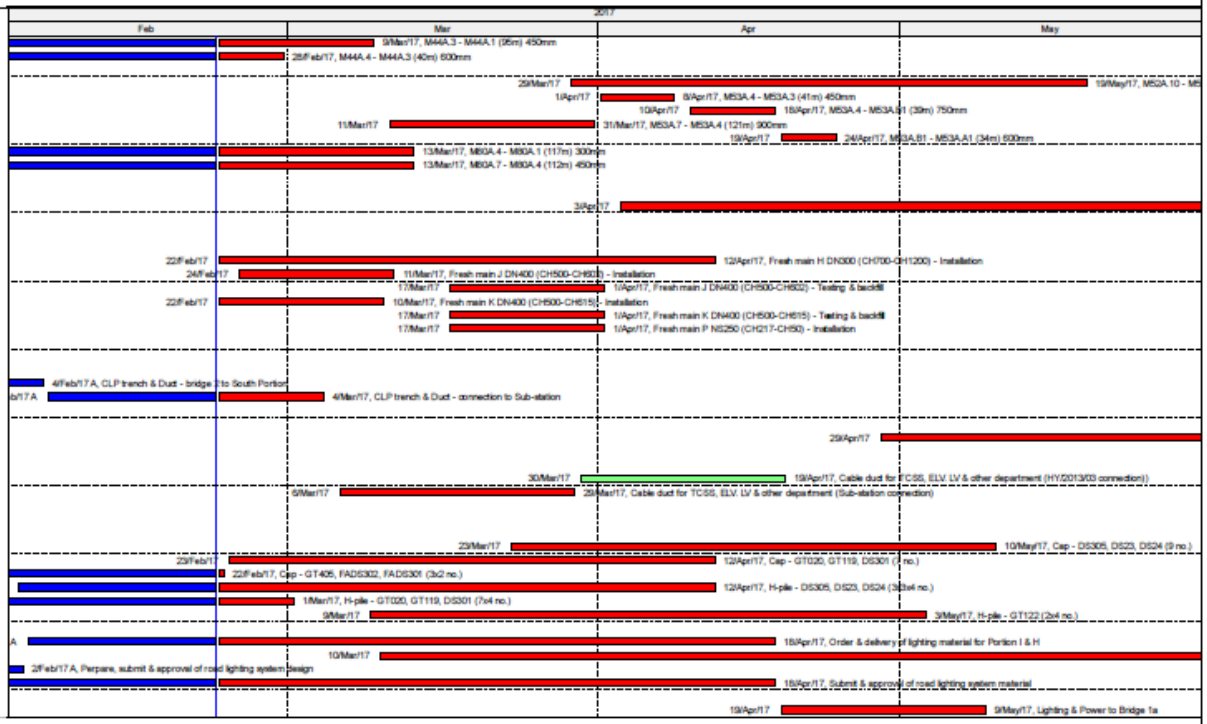
Activity ID	Activity Name	Original Duration	% Comp
D2-0640	M44A.3 - M44A.1 (95m) 450mm	14	100%
D2-0630	M44A.4 - M44A.3 (40m) 600mm	6	100%
C2(1) - B4			
D2-1030	M52A.10 - M52A.3 (285m) 1050mm	40	100%
D2-1010	M53A.4 - M53A.3 (41m) 450mm	6	100%
D2-1020	M53A.4 - M53A.B1 (39m) 750mm	5	100%
D2-1000	M53A.7 - M53A.4 (121m) 900mm	18	100%
D2-1023	M53A.B1 - M53A.A1 (34m) 600mm	5	0%
D2-0990	M80A.4 - M80A.1 (117m) 300mm	17	100%
D2-0980	M80A.7 - M80A.4 (112m) 450mm	17	100%
Branch, Collector drain, Gully & U-channel			
Portion A & B			
D4-0220	Branch, Gully, U-channel & C. drain - portion A	60	0%
Watermain			
Fresh Watermain			
Portion A			
WM-1240	Fresh main H DN300 (CH700-CH1200) - Installation	42	100%
WM-1260	Fresh main J DN400 (CH500-CH602) - Installation	14	100%
WM-1270	Fresh main J DN400 (CH500-CH602) - Testing & backfill	14	100%
WM-1280	Fresh main K DN400 (CH500-CH615) - Installation	15	100%
WM-1290	Fresh main K DN400 (CH500-CH615) - Testing & backfill	14	100%
WM-1300	Fresh main P NS250 (CH217-CH50) - Installation	14	100%
Utilities			
CLP Cable trench & duct			
Portion A1 & A3			
UT-1010	CLP trench & Duct - bridge 2 to South Portion	60	100%
UT-1060	CLP trench & Duct - connection to Sub-station	28	0%
Utilities & Ducting			
Portion D2 (site entrance)			
UT-1240	Tel Duct for Retaining wall at Bridge 2	55	0%
Cable Duct (TCSS, ELV & LV)			
Portion A & B			
UT-1230	Cable duct for TCSS, ELV, LV & other department (HY/2013/03 c	21	0%
UT-1210	Cable duct for TCSS, ELV, LV & other department (Sub-station co	21	0%
Road Works			
Road Furniture & Fit out			
Prebore H-Pile & Cap for Sign Gantry			
RW-1750	Cap - DS305, DS23, DS24 (9 no.)	49	0%
RW-1750	Cap - GT020, GT119, DS301 (7 no.)	49	0%
RW-1740	Cap - GT405, FADS302, FADS301 (3x2 no.)	42	0%
RW-1720	H-pile - DS305, DS23, DS24 (3x3x4 no.)	70	0%
RW-1710	H-pile - GT020, GT119, DS301 (7x4 no.)	70	0%
RW-1730	H-pile - GT122 (2x4 no.)	56	0%
Road Lighting Design & Submission			
RW-2080	Order & delivery of lighting material for Portion I & H	60	0%
RW-2090	Order & delivery of lighting material for remaining area	120	0%
RW-2060	Perpare, submit & approval of road lighting system design	60	0%
RW-2070	Submit & approval of road lighting system material	90	0%
Lighting & road furniture for Portion H			
RW-1640	Lighting & Power to Bridge 1a	21	0%



Remaining Level of Effort | Actual Work | Critical Remaining ...
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Appendix D

Event and Action Plan

Event/Action Plan for Air Quality

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
ACTION LEVEL				
1. Exceedance for one sample	1. Identify source, investigate the causes of exceedance and propose remedial measures; 2. Inform IEC and ER; 3. Repeat measurement to confirm finding; 4. Increase monitoring frequency to daily.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method.	1. Notify Contractor.	1. Rectify any unacceptable practice; 2. Amend working methods if appropriate.
2. Exceedance for two or more consecutive samples	1. Identify source; 2. Inform IEC and ER; 3. Advise the ER on the effectiveness of the proposed remedial measures; 4. Repeat measurement s to confirm findings; 5. Increase monitoring frequency to daily; 6. Discuss with IEC and Contractor on remedial actions required; 7. If exceedance continues, arrange meeting with IEC and ER; 8. If exceedance stops, cease additional monitoring.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET and Contractor on possible remedial measures; 4. Advise the ER on the effectiveness of the proposed remedial measures; 5. Supervise Implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Ensure remedial measures properly implemented.	1. Submit proposals for remedial to ER within 3 working days of notification; 2. Implement the agreed proposals; 3. Amend proposal if appropriate.

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
LIMIT LEVEL				
1. Exceedance for one sample	1. Identify source, investigate the causes of exceedance and propose remedial measures; 2. Inform ER, Contractor and EPD; 3. Repeat measurement to confirm finding; 4. Increase monitoring frequency to daily; 5. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET and Contractor on possible remedial measures; 4. Advise the ER on the effectiveness of the proposed remedial measures; 5. Supervise implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Ensure remedial measures properly implemented.	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC within 3 working days of notification; 3. Implement the agreed proposals; 4. Amend proposal if appropriate.
2. Exceedance for two or more consecutive samples	1. Notify IEC, ER, Contractor and EPD; 2. Identify source; 3. Repeat measurement to confirm findings; 4. Increase monitoring frequency to daily; 5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented; 6. Arrange meeting with IEC and ER to discuss the remedial actions to be taken; 7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results; 8. If exceedance stops, cease additional monitoring.	1. Discuss amongst ER, ET, and Contractor on the potential remedial actions; 2. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly; 3. Supervise the implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. In consultation with the IEC, agree with the Contractor on the remedial measures to be implemented; 4. Ensure remedial measures properly implemented; 5. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated.	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC within 3 working days of notification; 3. Implement the agreed proposals; 4. Resubmit proposals if problem still not under control; 5. Stop the relevant portion of works as determined by the ER until the exceedance is abated.

Event / Action Plan for Construction Noise Monitoring

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
Action Level	1. Notify IEC and Contractor; 2. Identify source, investigate the causes of exceedance and propose remedial measures; 3. Report the results of investigation to the IEC, ER and Contractor; 4. Discuss with the Contractor and formulate remedial measures; 5 Increase monitoring frequency to check mitigation effectiveness.	1. Review the analysed results submitted by the ET; 2. Review the proposed remedial measures by the Contractor and advise the ER accordingly; 3. Supervise the implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Require Contractor to propose remedial measures for the analysed noise problem; 4. Ensure remedial measures are properly implemented.	1. Submit noise mitigation proposals to IEC; 2. Implement noise mitigation proposals.
Limit Level	1. Inform IEC, ER, EPD and Contractor; 2. Identify source; 3. Repeat measurements to confirm findings; 4. Increase monitoring frequency; 5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented; 6. Inform IEC, ER and EPD the causes and actions taken for the exceedances; 7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results; 8. If exceedance stops, cease additional monitoring.	1. Discuss amongst ER, ET, and Contractor on the potential remedial actions; 2. Review Contractors remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly; 3. Supervise the implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Require Contractor to propose remedial measures for the analysed noise problem; 4. Ensure remedial measures properly implemented; 5. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated.	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC within 3 working days of notification; 3. Implement the agreed proposals; 4. Resubmit proposals if problem still not under control; 5. Stop the relevant portion of works as determined by the ER until the exceedance is abated.

Event and Action Plan for Water Quality

Event	ET Leader	IEC	ER	Contractor
Action level being exceeded by one sampling day	1. Repeat in situ measurement on next day of exceedance to confirm findings 2. Identify source(s) of impact 3. Inform IEC, contractor and ER 4. Check monitoring data, all plant, equipment and Contractor's working methods	1. Confirm receipt of notification of noncompliance in writing 2. Notify Contractor	1. Confirm receipt of notification of noncompliance in writing 2. Notify Contractor	1. Inform the ER and confirm notification of the noncompliance in writing 2. Rectify unacceptable practice 3. Amend working methods if appropriate.
Action level being exceeded by two or more consecutive sampling days	1. Repeat in situ measurement to confirm findings 2. Identify source(s) of impact 3. Inform IEC, Contractor and ER 4. Check monitoring data, all plant, equipment and Contractor's working methods 5. Discuss mitigation measures with IEC, ER and Contractor 6. Ensure mitigation measures are implemented 7. Increase the monitoring frequency to daily until no exceedance of Action level; 8. Repeat measurement on next day of exceedance to confirm findings.	1. Check monitoring data submitted by ET and Contractor's working method 2. Discuss with ET and Contractor on possible remedial actions 3. Review the proposed mitigation measures submitted by Contractor and advise the ER accordingly 4. Assess the effectiveness of the implemented mitigation measures.	1. Confirm receipt of notification of noncompliance in writing 2. Discuss with IEC on the proposed mitigation measures 3. Make agreement on mitigation measures to be implemented 4. Ensure mitigation measures are properly implemented 5. Assess the effectiveness of the implemented mitigation measures	1. Inform the Engineer and confirm notification of the noncompliance in writing; 2. Rectify unacceptable practice 3. Check all plant and equipment and consider changes of working methods 4. Discuss with ET and IEC on possible remedial actions and propose mitigation measures to IEC and ER within 3 working days of notification 5. Implement the agreed mitigation measures 6. Amend working methods if appropriate

Limit level being exceeded by one sampling day	1. Repeat in-situ measurement to confirm findings 2. Identify source(s) of impact 3. Inform IEC, Contractor, ER and EPD 4. Check monitoring data, all plant, equipment and Contractor's working methods 5. Discuss mitigation measures with IEC, ER and Contractor 6. Ensure mitigation measures are implemented 7. Increase the monitoring frequency to daily until no exceedance of Limit level	1. Check monitoring data submitted by ET and Contractor's working method 2. Discuss with ET and Contractor on possible remedial actions 3. Review the proposed mitigation measures submitted by Contractor and advise the ER accordingly 4. Assess the effectiveness of the implemented mitigation measures	1. Confirm receipt of notification of failure in writing 2. Discuss with IEC, ET and Contractor on the proposed mitigation measures 3. Request Contractor to critically review the working methods 4. Ensure mitigation measures are properly implemented 5. Assess the effectiveness of the implemented mitigation measures	1. Inform the ER and confirm notification of the noncompliance in writing 2. Rectify unacceptable practice 3. Check all plant and equipment and consider changes of working methods 4. Submit proposal of mitigation measures to ER within 3 working days of notification and discuss with ET, IEC and ER 5. Implement the agreed mitigation measures 6. Amend working methods if appropriate
Limit level being exceeded by two or more consecutive sampling days	1. Repeat in-situ measurement to confirm findings 2. Identify source(s) of impact 3. Inform IEC, contractor, ER and EPD 4. Check monitoring data, all plant, equipment and Contractor's working methods 5. Discuss mitigation measures with IEC, ER and Contractor 6. Ensure mitigation measures are implemented 7. Increase the monitoring frequency to daily until no exceedance of Limit level for two consecutive days	1. Check monitoring data submitted by ET and Contractor's working method 2. Discuss with ET and Contractor on possible remedial actions 3. Review the Contractor's mitigation measures whenever necessary to assure their effectiveness and advise the ER accordingly.	1. Confirm receipt of notification of failure in writing 2. Discuss with IEC, ET and Contractor on the proposed mitigation measures 3. Request Contractor to critically review the working methods 4. Make agreement on the mitigation measures to be implemented 5. Ensure mitigation measures are properly implemented 6. Assess the effectiveness of the implemented mitigation measures 7. Consider and instruct, if necessary, the Contractor to slow down or to stop all or part of the construction activities until no exceedance of Limit level.	1. Inform the ER and confirm notification of the noncompliance in writing 2. Take immediate action to avoid further exceedance 3. Rectify unacceptable practice 4. Check all plant and equipment and consider changes of working methods 5. Submit proposal of mitigation measures to ER within 3 working days of notification and discuss with ET, IEC and ER 6. Implement the agreed mitigation measures 7. Resubmit proposals of mitigation measures if problem still not under control; 8. As directed by the engineer, to slow down or to stop all or part of the construction activities until no exceedance of Limit level.

Event / Action Plan for Dolphin Monitoring

Event	ET Leader	IEC	ER / SOR	Contractor
Action Level	1. Repeat statistical data analysis to confirm findings; 2. Review all available and relevant data, including raw data and statistical analysis results of other parameters covered in the EM&A, to ascertain if differences are as a result of natural variation or previously observed seasonal differences; 3. Identify source(s) of impact; 4. Inform the IEC, ER/SOR and Contractor; 5. Check monitoring data. 6. Review to ensure all the dolphin protective measures are fully and properly implemented and advise on additional measures if necessary.	1. Check monitoring data submitted by ET and Contractor; 2. Discuss monitoring results and finding with the ET and the Contractor.	1. Discuss monitoring with the IEC and any other measures proposed by the ET; 2. If ER/SOR is satisfied with the proposal of any other measures, ER/SOR to signify the agreement in writing on the measures to be implemented.	1. Inform the ER/SOR and confirm notification of the non-compliance in writing; 2. Discuss with the ET and the IEC and propose measures to the IEC and the ER/SOR; 3. Implement the agreed measures.
Limit Level	1. Repeat statistical data analysis to confirm findings; 2. Review all available and relevant data, including raw data and statistical analysis results of other parameters covered in the EM&A, to ascertain if differences are as a result of natural variation or previously observed seasonal differences; 3. Identify source(s) of impact; 4. Inform the IEC, ER/SOR and Contractor of findings; 5. Check monitoring data; 6. Repeat review to ensure all the dolphin protective measures are fully and properly implemented and advise on additional measures if necessary. 7. If ET proves that the source of impact is caused by any of the construction activity by the works contract, ET to arrange a meeting to discuss with IEC, ER/SOR and Contractor the necessity of additional dolphin monitoring and/or any other potential mitigation measures (e.g., consider to modify the perimeter silt curtain or consider to control/temporarily stop relevant construction activity etc.) and submit to IEC a proposal of additional dolphin monitoring and/or mitigation measures where necessary.	1. Check monitoring data submitted by ET and Contractor; 2. Discuss monitoring results and findings with the ET and the Contractor; 3. Attend the meeting to discuss with ET, ER/SOR and Contractor the necessity of additional dolphin monitoring and any other potential mitigation measures. 4. Review proposals for additional monitoring and any other mitigation measures submitted by ET and Contractor and advise ER/SOR of the results and findings accordingly. 5. Supervise / Audit the implementation of additional monitoring and/or any other mitigation measures and advise ER/SOR the results and findings accordingly.	1. Attend the meeting to discuss with ET, IEC and Contractor the necessity of additional dolphin monitoring and any other potential mitigation measures. 2. If ER/SOR is satisfied with the proposals for additional dolphin monitoring and/or any other mitigation measures submitted by ET and Contractor and verified by IEC, ER/SOR to signify the agreement in writing on such proposals and any other mitigation measures. 3. Supervise the implementation of additional monitoring and/or any other mitigation measures.	1. Inform the ER/SOR and confirm notification of the non-compliance in writing; 2. Attend the meeting to discuss with ET, IEC and ER/SOR the necessity of additional dolphin monitoring and any other potential mitigation measures. 3. Jointly submit with ET to IEC a proposal of additional dolphin monitoring and/or any other mitigation measures when necessary. 4. Implement the agreed additional dolphin monitoring and/or any other mitigation measures.

Appendix E

Waste Flow Table

China Harbour Engineering Company Limited

Monthly Summary Waste Flow Table for 2017 (year)

Name of Person completing the record: Paper CHAN / ES

Project : Hong Kong – Zhuhai – Macao Bridge, Hong Kong Crossing Boundary Facilities – Infrastructure Works Stage I (Western Portion) Contract No.: HY/2013/02

Month	Actual Quantities of Inert C&D Materials Generated Monthly						Actual Quantities of C&D Wastes Generated Monthly				
	Total Quantity Generated	Hard Rock and Large Broken Concrete (see Note 1)	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Imported Fill	Metals	Paper/ cardboard packaging	Plastics (see Note 2)	Chemical Waste	Others, e.g. general refuse (see Note 3)
	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000 kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000 m^3)
Jan	0	0	0	0	0	0	0	0.0950	0	0	0.1755
Feb	0.4950	0	0	0	0.4950	5.445	0	0.1800	0.0248	0	0.1105
Mar											
Apr											
May											
Jun											
Sub-total	0.4950	0	0	0	0.4950	5.4450	0	0.2750	0.0248	0	0.2860
Jul											
Aug											
Sep											
Oct											
Nov											
Dec											
Total	0.4950	0	0	0	0.4950	5.4450	0	0.2750	0.0248	0	0.2860

Notes: (1) The waste flow table shall also include C&D materials that are specified in the Contract to be imported for use at the Site.

(2) Plastics refer to plastic bottles/containers, plastic sheets/ foam from packaging materials.

(3) Broken concrete for recycling into aggregates.

China Harbour Engineering Company Limited

Monthly Summary of Marine Sediment for 2017

Month	a. Volume of Marine Sediment Generated	b.Volume of Marine Sediment Disposed (m^3)	c.Estimated Volume of Marine Sediment Stored on
Jan	0	0	0(*)
Feb	88	88	0
Mar			
Apr			
May			
Jun			
Jul			
Aug			
Sep			
Oct			
Nov			
Dec			
Total	**88**	**88**	0

Note:* The volume of marine sediment disposed is measured by barge load while the volume of marine sediment generated and stored on site is a rough estimation. The accurate volume of marine sediment excavated was hardly measured and thus tiny difference between the volume of marine sediment disposed and the volume of marine sediment generated would be existed. Therefore, after on-site checking by the Contractor and confirmed by RSS that the final estimated quantity of marine sediment stored at site in 2016 is 0 m3 instead of 1422 m3.

Appendix F

Environmental Licenses and Permits

Environmental Licenses and Permits

Item No.	Type of Permit / Licence	Reference No.	Application Date	Date of Issue	Date of Expiry	Remark
1	Environmental Permit under EIAO	EP-353/2009/K	24 Mar 2016	11 Apr 2016	NA	Issued
2	Construction Dust Notification (Western Portion)	Acknowledge Receipt: 377883	5 Aug 2014	11 Aug 2014	NA	Notified
3	Construction Dust Notification (Works Area WA3)	Acknowledge Receipt: 377884	5 Aug 2014	18 Aug 2014	NA	Notified
4	Construction Waste Disposal Account	Billing Account No.: 7020516	5 Aug 2014	15 Aug 2014	NA	Account approved
5	Registration as a Chemical Waste Producer (Works Area WA3)	Waste Producer Number (WPN): 5213-961-C1186-23	1 Sep 2014	17 Oct 2014	NA	Registration completed
6	Registration as a Chemical Waste Producer (Western Portion)	Waste Producer Number (WPN): 5213-961-C1186-27	20 Oct 2014	24 Nov 2014	NA	Registration completed
7	Discharge License under WPCO (Works Area WA3)	License No.: WT00020194-2014	21 Aug 2014	27 Oct 2014	31 Oct 2019	License approved
8	Discharge License under WPCO (Western Portion)	License No.: WT00020597-2014	25 Sep 2014	16 Mar 2015	31 Mar 2020	License approved
9	Construction Noise Permit under NCO for HKBCF(Western Portion)	License No.: GW-RS0072-17	12 Jan 2017	26 Jan 2017	25 May 2017	Permit Approved

Appendix G

Implementation Schedule for Environmental Mitigation Measures (EMIS)

Environmental Mitigation Implementation Schedule – Hong Kong Boundary Crossing Facilities (Superstructures and Infrastructures)

EIA Ref.	EM&A Log Ref	Environmental Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location	When to implement the measures?	What requirements or standards for the measure to achieve?	Implementation Status
Air Quality								
S5.5.6.1 of HKBCFEIA	A1	The contractor shall follow the procedures and requirements given in the Air Pollution Control (Construction Dust) Regulation	Good construction site practices to control the dust impact at the nearby sensitive receivers to within the relevant criteria	Contractor	All construction sites	Construction stage	To control the dust impact to within the HKAQO and TM-EIA criteria(Ref. 1-hr and 24 hr TSP levels are 500μgm^{-3} and 260$\mu gm^{-3,}$ respectively)	V
S5.5.6.2 of HKBCFEIA and S4.8.1 of TKCLKLEIA	A2	Proper watering of exposed spoil should be undertaken throughout the construction phase: - Any excavated or stockpile of dusty material should be covered entirely by impervious sheeting or sprayed with water to maintain the entire surface wet and then removed or backfilled or reinstated where practicable within 24 hours of the excavation or unloading; - Any dusty materials remaining after a stockpile is removed should be wetted with water and cleared from the surface of roads; - A stockpile of dusty material should not be extended beyond the pedestrian barriers, fencing or traffic cones. - Where practicable, vehicle washing facilities with high pressure water jet should be provided at every discernible or designated vehicle exit point. The area where vehicle washing takes place and the road section between the washing facilities and the exit point should be paved with concrete, bituminous materials or hardcores; - When there are open excavation and reinstatement works, hoarding of not less than 2.4m high should be provided as far as practicable along the site boundary with provision for public crossing. Good site practice	Good construction site practices to control the dust impact at the nearby sensitive receivers to within the relevant criteria	Contractor	All construction sites	Construction stage	To control the dust impact to within the HKAQO and TM-EIA criteria(Ref. 1-hr and 24 hr TSP levels are 500μgm^{-3} and 260$\mu gm^{-3,}$ respectively)	V

EIA Ref.	EM&A Log Ref	Environmental Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location	When to implement the measures?	What requirements or standards for the measure to achieve?	Implementation Status
		shall also be adopted by the Contractor to ensure the conditions of the hoardings are properly maintained throughout the construction period; - The portion of any road leading only to construction site that is within 30m of a vehicle entrance or exit should be kept clear of dusty materials; - Surfaces where any pneumatic or power-driven drilling, cutting, polishing or other mechanical breaking operation takes place should be sprayed with water or a dust suppression chemical continuously; - Any area that involves demolition activities should be sprayed with water or a dust suppression chemical immediately prior to, during and immediately after the activities so as to maintain the entire surface wet; - Where a scaffolding is erected around the perimeter of a building under construction, effective dust screens, sheeting or netting should be provided to enclose the scaffolding from the ground floor level of the building, or a canopy should be provided from the first floor level up to the highest level of the scaffolding; - Any skip hoist for material transport should be totally enclosed by impervious sheeting; - Every stock of more than 20 bags of cement or dry pulverised fuel ash (PFA) should be covered entirely by impervious sheeting or placed in an area sheltered on the top and the 3 sides; - Cement or dry PFA delivered in bulk should be stored in a closed silo fitted with an audible high level alarm which is interlocked with the material filling line and no overfilling is allowed;					

EIA Ref.	EM&A Log Ref	Environmental Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location	When to implement the measures?	What requirements or standards for the measure to achieve?	Implementation Status
		- Loading, unloading, transfer, handling or storage of bulk cement or dry PFA should be carried out in a totally enclosed system or facility, and any vent or exhaust should be fitted with an effective fabric filter or equivalent air pollution control system; and - Exposed earth should be properly treated by compaction, turfing, hydroseeding, vegetation planting or sealing with latex, vinyl, bitumen, shotcrete or other suitable surface stabiliser within six months after the last construction activity on the construction site or part of the construction site where the exposed earth lies.						
S5.5.6.3 of HKBCFEIA and S4.8.1 of TKCLKLEIA	A3	The Contractor should undertake proper watering on all exposed spoil and associated work areas (with at least 8 times per day) throughout the construction phase.	Control construction dust	Contractor	All construction sites	Construction stage	To control the dust impact	V
S5.5.6.4 of HKBCFEIA	A4	Engineer to incorporate the controlled measures into the Particular Specification (PS) for the civil work. The PS should also draw the contractor's attention to relevant latest Practice notes issued by EPD.	Control construction dust	Engineer	All construction sites	Design Stage	Air pollution Control (Construction Dust) Regulation	V
S5.5.6.4 of HKBCFEIA and S4.11 of TKCLKLEIA	A5	Implement regular dust monitoring under EM&A programme during the construction stage.	Monitor the 24hr and 1hr TSP levels at the representative dust monitoring stations to ensure compliance with relevant criteria throughout the construction period.	Contractor of Contract No. HY/2010/02 and Contractor of Contract No. HY/2011/03	Selected representative dust monitoring station	Construction stage	- Air Pollution Control (Construction Dust) Regulation - To control the dust impact to within the HKAQO and TM-EIA criteria(Ref. 1-hr and 24 hr TSP levels are 500μgm^{-3} and 260$\mu gm^{-3,}$ respectively)	V

EIA Ref.	EM&A Log Ref	Environmental Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location	When to implement the measures?	What requirements or standards for the measure to achieve?	Implementation Status
S5.5.7.1 of HKBCFEIA	A6	The following mitigation measures should be adopted to prevent fugitive dust emissions for concrete batching plant: Loading, unloading, handling, transfer or storage of any dusty materials should be carried out in totally enclosed system; All dust-laden air or waste gas generated by the process operations should be properly extracted and vented to fabric filtering system to meet the emission limits for TSP; Vents for all silos and cement/ pulverised fuel ash (PFA) weighing scale should be fitted with fabric filtering system; The materials which may generate airborne dusty emissions should be wetted by water spray system; All receiving hoppers should be enclosed on three sides up to 3m above unloading point; All conveyor transfer points should be totally enclosed; All access and route roads within the premises should be paved and wetted; and Vehicle cleaning facilities should be provided and used by all concrete trucks before leaving the premises to wash off any dust on the wheels and/or body.	Monitor the 24hr and 1hr TSP levels at the representative dust monitoring stations to ensure compliance with relevant criteria throughout the construction period.	Contractor	Selected representative dust monitoring station	Construction stage	Air Pollution Control (Construction Dust) Regulation - To control the dust impact to within the HKAQO and TM-EIA criteria(Ref. 1-hr and 24 hr TSP levels are 500μgm^{-3} and 260$\mu gm^{-3,}$ respectively)	N/A

EIA Ref.	EM&A Log Ref	Environmental Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location	When to implement the measures?	What requirements or standards for the measure to achieve?	Implementation Status
S5.5.2.7 of HKBCFEIA	A7	The following mitigation measures should be adopted to prevent fugitive dust emissions at barging point: All road surface within the barging facilities will be paved; Dust enclosures will be provided for the loading ramp; Vehicles will be required to pass through designated wheels wash facilities; and Continuous water spray at the loading points.	Control construction dust	Contractor	All construction sites	Construction stage	Air Pollution Control (Construction Dust) Regulation	N/A (Construction in process)
Construction Noise (Air borne)								
S6.4.10 of HKBCFEIA	N1	Use of good site practices to limit noise emissions by considering the following: - only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction programme; - machines and plant (such as trucks, cranes) that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum; - plant known to emit noise strongly in one direction, where possible, be orientated so that the noise is directed away from nearby NSRs; - silencers or mufflers on construction equipment should be properly fitted and maintained during the construction works; - mobile plant should be sited as far	Control construction airborne noise by means of good site practices	Contractor	All construction sites	Construction stage	Noise Control Ordinance	V

EIA Ref.	EM&A Log Ref	Environmental Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location	When to implement the measures?	What requirements or standards for the measure to achieve?	Implementation Status
		away from NSRs as possible and practicable; - material stockpiles, mobile container site officer and other structures should be effectively utilised, where practicable, to screen noise from on-site construction activities.						
S6.4.11 of HKBCFEIA	N2	Install temporary hoarding located on the site boundaries between noisy construction activities and NSRs. The conditions of the hoardings shall be properly maintained throughout the construction period.	Reduce the construction noise levels at low-level zone of NSRs through partial screening	Contractor	All construction sites	Construction stage	- Noise Control Ordinance - Annex 5, TM_EIA	V
S6.4.12 of HKBCFEIA	N3	Install movable noise barriers (typically density 14kg/m^2), acoustic mat or full enclosure close to noisy plants including air compressor, generators, saw.	Screen the noisy plant items to be used at all construction sites	Contractor	For plant items listed in Appendix 6D of the EIA report at all construction sites	Construction stage	- Noise Control Ordinance - Annex 5, TM_EIA - 75dB(A) for residential premises - The movable barrier should achieve at least 5 dB(A) and the full enclosure should be designed to achieve 10dB(A)	N/A
S6.4.13 of HKBCFEIA	N4	Select “Quiet plants” which comply with the BS 5228 Part 1 or TM standards.	Reduce the noise levels of plant items	Contractor	For plant items listed In Appendix 6D of the EIA report at all construction sites	Construction stage	- Noise Control Ordinance - Annex 5, TM_EIA	V
S6.4.14 of HKBCFEIA	N5	Sequencing operation of construction plants where practicable.	Operate sequentially within the same work site to reduce the construction airborne noise	Contractor	All construction sites where practicable	Construction stage	- Noise Control Ordinance - Annex 5, TM_EIA	V

EIA Ref.	EM&A Log Ref	Environmental Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location	When to implement the measures?	What requirements or standards for the measure to achieve?	Implementation Status
S5.1 of TMCLKLEIA	N6	Implement a noise monitoring under EM&A programme.	Monitor the construction noise levels at selected representative locations	Contractor of Contract No. HY/2010/02	Selected representative noise monitoring station	Construction stage	- Noise Control Ordinance - Annex 5, TM_EIA - 75dB(A) for residential premises	V
Sediment								
	S1	All dredged marine mud, which required Type 2 Confined Marine Disposal under Environment, Transport and Works Bureau Technical Circular (Works) No. 34/2002 Management of Dredged/Excavated Sediment, from the Project shall be disposed of inside the sheet pile cellular structures within the Project boundary.	Re-deposition of Contaminated Sediment	Contractor	Dredged Contaminated Sediment	Construction stage	- Waste Disposal Ordinance - ETWB TC 34/2002	V
	S2	Before re-deposition the contaminated sediment, a layer of geotextile shall be placed at the bottom of the sheet pile cellular structures to avoid direct contact of the contaminated sediment and the bottom sediment.	Re-deposition of Contaminated Sediment	Contractor	Dredged Contaminated Sediment	Construction stage	- Waste Disposal Ordinance - ETWB TC 34/2002	V
	S3	A minimum of 2m thick sand fill or public fill shall be placed on top of the contaminated sediment to protect and cover the sediment after redeposition.	Re-deposition of Contaminated Sediment	Contractor	Dredged Contaminated Sediment	Construction stage	- Waste Disposal Ordinance - ETWB TC 34/2002	V

EIA Ref.	EM&A Log Ref	Environmental Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location	When to implement the measures?	What requirements or standards for the measure to achieve?	Implementation Status
	S4	The contaminated sediment shall not be disturbed after re-deposition. No piling works or deep foundation which may disturb the contaminated sediment is allowed within the cellular structures.	Re-deposition of Contaminated Sediment	Contractor	Dredged Contaminated Sediment	Construction stage	- Waste Disposal Ordinance - ETWB TC 34/2002	V
Waste management (Construction Waste)								
S12.6 of TMCLKLEIA	WM1	The Contractor shall identify a coordinator for the management of waste.	Proper implementation of WMP	Contractor	Contractor All construction sites	Construction stage		V
S12.6 of TMCLKLEIA	WM2	The Contractor shall apply for and obtain the appropriate licenses for the disposal of public fill, chemical waste and effluent discharges.	Proper control of wastes disposal in accordance to relevant ordinances	Contractor	All construction sites	Construction Stage	- Land (Miscellaneous Provisions) Ordinance (Cap28); - Waste Disposal Ordinance (Cap 354); - Dumping at Sea Ordinance (Cap 466); - Water Pollution Control Ordinance.	V
S12.6 of TMCLKLEIA	WM3	EM&A of waste handling, storage, transportation, disposal procedures and documentation through the site audit programme shall be undertaken.	Ensure proper implementation mitigation measures stated in WMP	Contractor	All construction sites		Construction stage	V

EIA Ref.	EM&A Log Ref	Environmental Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location	When to implement the measures?	What requirements or standards for the measure to achieve?	Implementation Status
S8.3.8 of HKBCFEIA and S12.6 of TMCLKLEIA	WM4	*Construction and Demolition Material* The following mitigation measures should be implemented in handling the waste: - Maintain temporary stockpiles and reuse excavated fill material for backfilling and reinstatement; - Carry out on-site sorting; - Make provisions in the Contract documents to allow and promote the use of recycled aggregates where appropriate; - Adopt 'Selective Demolition' technique to demolish the existing structures and facilities with a view to recovering broken concrete effectively for recycling purpose, where possible; - Implement a trip-ticket system for each works contract to ensure that the disposal of C&D materials are properly documented and verified; - Implement an enhanced Waste Management Plan similar to ETWBTC (Works) No. 19/2005 – "Environmental Management on Construction Sites" to encourage on-site sorting of C&D materials and to minimize their generation during the course of construction; - In addition, disposal of the C&D materials onto any sensitive locations such as agricultural lands, etc. should be avoided. The Contractor shall propose the final disposal sites to the Project Proponent and get its approval before implementation; - The surplus surcharge should be transferred to a fill bank.	Good site practice to minimize and recycle the C&D material as far as practicable so as to reduce the amount for final disposal	Contractor	All construction site areas	Construction stage	- Land (Miscellaneous Provisions) Ordinance - Waste Disposal Ordinance - ETWB TC 19/2005	V
S8.3.9 - S8.3.11 of	WM5	*C&D Waste*	Good site practice to minimize and recycle the	Contractor	All construction sites	Construction stage	- Land (Miscellaneous Provisions)	V

EIA Ref.	EM&A Log Ref	Environmental Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location	When to implement the measures?	What requirements or standards for the measure to achieve?	Implementation Status
HKBCFEIA and S12.6 of TMCLKLEIA		- Standard formwork or pre-fabrication should be used as far as practicable in order to minimise the arising of C&D materials. The use of more durable formwork or plastic facing for the construction works should be considered. Use of wooden hoardings should not be used, as in other projects. - Metal hoarding and falsework should be used to enhance the possibility of recycling. The purchasing of construction materials will be carefully planned in order to avoid over ordering and wastage. - The Contractor should recycle as much of the C&D materials as possible on-site. Public fill and C&D waste should be segregated and stored in different containers or skips to enhance reuse or recycling of materials and their proper disposal. Where practicable, concrete and masonry can be crushed and used as fill. Steel reinforcement bar can be used by scrap steel mills. Different areas of the sites should be considered for such segregation and storage.	C&D material as far as practicable so as to reduce the amount for final disposal				Ordinance - Waste Disposal Ordinance - ETWB TC 19/2005	
S8.2.12 - S8.3.15 of HKBCFEIA and S12.6 of TMCLKLEIA	WM6	*Chemical Waste* - Chemical waste that is produced, as defined by Schedule 1 of the Waste Disposal (Chemical Waste) (General) Regulation, should be handled in accordance with the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes. - Containers used for the storage of chemical wastes should be suitable for the substance they are holding,	Control the chemical waste and ensure proper storage, handling and disposal.	Contractor	All construction sites	Construction stage	- Waste Disposal(Chemical Waste) General Regulation - Code of Practice on the Packaging, Labelling and Storage of Chemical Waste	V

EIA Ref.	EM&A Log Ref	Environmental Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location	When to implement the measures?	What requirements or standards for the measure to achieve?	Implementation Status
		resistant to corrosion, maintained in a good condition, and securely closed; have a capacity of less than 450 litres unless the specification has been approved by the EPD; and display a label in English and Chinese in accordance with instructions prescribed in Schedule 2 of the regulation. - The storage area for chemical wastes should be clearly labelled and used solely for the storage of chemical waste; enclosed on at least 3 sides; have an impermeable floor and bunding of sufficient capacity to accommodate 110% of the volume of the largest container or 20 % of the total volume of waste stored in that area, whichever is the greatest; have adequate ventilation; covered to prevent rainfall entering; and arranged so that incompatible materials are adequately separated. - Disposal of chemical waste should be via a licensed waste collector; be to a facility licensed to receive chemical waste, such as the Chemical Waste Treatment Centre which also offers a chemical waste collection service and can supply the necessary storage containers; or be to a reuser of the waste, under approval from the EPD.						
S8.3.16 of HKBCFEIA and S12.6 of TMCLKLEIA	WM7	*Sewage* Adequate numbers of portable toilets should be provided for the workers. The portable toilets should be maintained in a state, which will not deter the workers from utilizing these portable toilets. Night soil should be collected by licensed collectors regularly.	Proper handling of sewage from worker to avoid odour, pest and litter impacts.	Contractor	All construction sites	Construction stage	Waste Disposal Ordinance	V

EIA Ref.	EM&A Log Ref	Environmental Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location	When to implement the measures?	What requirements or standards for the measure to achieve?	Implementation Status
S8.3.17 of HKBCFEIA and S12.6 of TMCLKLEIA	WM8	*General Refuse* - The site and surroundings shall be kept tidy and litter free. General refuse generated on-site should be stored in enclosed bins or compaction units separately from construction and chemical wastes. - A reputable waste collector should be employed by the Contractor to remove general refuse from the site, separately from construction and chemical wastes, on a daily basis to minimize odour, pest and litter impacts. Burning of refuse on construction sites is prohibited by law. - Aluminium cans are often recovered from the waste stream by individual collectors if they are segregated and made easily accessible. Separate labelled bins for their deposit should be provided if feasible. - Office wastes can be reduced through the recycling of paper if volumes are large enough to warrant collection. Participation in a local collection scheme should be considered by the Contractor. In addition, waste separation facilities for paper, aluminium cans, plastic bottles etc., should be provided. - Training should be provided to workers about the concepts of site cleanliness and appropriate waste management procedure, including reduction, reuse and recycling of wastes. - Sufficient dustbins shall be provided for storage of waste as required under the Public Cleansing and Prevention of Nuisances By-laws. In	Minimize production of the general refuse and avoid odour, pest and litter impacts.	Contractor	All construction sites	Construction stage	Waste Disposal Ordinance	V

EIA Ref.	EM&A Log Ref	Environmental Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location	When to implement the measures?	What requirements or standards for the measure to achieve?	Implementation Status
		addition, general refuse shall be cleared daily and shall be disposed of to the nearest licensed landfill or refuse transfer station. - All waste containers shall be in a secure area on hardstanding.						
Water Quality (Construction Phase)								
	W1	Mitigation during the marine works to reduce impacts to within acceptable levels have been recommended and will comprise a series of measures that restrict the method and sequencing of dredging/backfilling, as well as protection measures. Details of the measures are provided below: - No dredging works of marine sediment shall be carried out the Project except for the construction of box culverts and seawalls at Portion D. - Reclamation filling for the Project shall not proceed until at least 200m of leading seawall at the reclamation area formed above +2.2mPD, unless otherwise agreement was obtained from EPD, except for the 300m gaps for marine access. All underwater filling works shall be carried out behind seawalls to avoid dispersion of suspended solids outside the Project limit; - Except for the filling of the cellular structures, not more than 15% public fill shall be used for reclamation filling below +2.5mPD during construction of the seawall; - After the seawall is completed except for the 300m marine access as indicated in the EPs, not more than 30% public fill shall be used for	To control construction water quality	Contractor of Contract No. HY/2010/02	During dredging and filling	Construction stage	TM-EIAO	V

EIA Ref.	EM&A Log Ref	Environmental Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location	When to implement the measures?	What requirements or standards for the measure to achieve?	Implementation Status
		reclamation filling below +2.5mPD, unless otherwise agreement from EPD was obtained; - No more than 2 grab dredgers with a maximum daily dredging rate of 12,000m^3 shall be employed for dredging operation at Portion D of the Project; - Upon completion of 200m leading seawall, no more than a total of 60 filling barge trips per day shall be made with a cumulative maximum daily filling rate of 60,000 m^3 for HKBCF and TMCLKL southern landfall reclamation during the filling operation; and - Upon completion of the whole section of seawall except for the 300m marine access as indicated in the EPs, no more than a total of 190 filling barge trips per day shall be made with a cumulative maximum daily filling rate of 190,000 m^3 for the remaining filling operations for HKBCF and TMCLKL southern landfall reclamation. - Closed grabs should be used for sediment dredging to reduce sediment loss when lifting the grabs to the barges. Only grab dredgers shall be used for dredging works of the Project; - All mechanical grabs shall be designed and maintained to avoid spillage; - The moving speed of construction vessels in the dredging area should be reduced to prevent disturbance to the seabed generating sediment plumes; - Floating type silt curtains shall be installed enclosing the entire reclamation site at all time. Staggered						

EIA Ref.	EM&A Log Ref	Environmental Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location	When to implement the measures?	What requirements or standards for the measure to achieve?	Implementation Status
		layers of silt curtain shall be provided to prevent sediment loss at navigation accesses. The length of each staggered layers shall be at least 200m; - The cage-type silt-curtain with steel enclosure is proposed to be installed to enclose local pollution caused by the grab dredging. The grab dredging work should be carried out within the cage-type silt curtain; - Single layer silt curtain to be applied around the North-east airport water intake; - The silt-curtains should be maintained in good condition to ensure the sediment plume generated from dredging and filling be confined effectively within the site boundary; - The dredging and filling works shall be scheduled to spread the works evenly over a working day; - Cellular structure shall be used for seawall construction; - A layer of geotextile shall be placed on top of the seabed before any filling activities take place inside the cellular structures to form the seawall; - The conveyor belts shall be fitted with windboards and conveyor release points shall be covered with curtain to prevent any spillage of filling materials onto the surrounding waters; - An additional layer of silt curtain shall be installed near the active stone column installation points. A layer of geotextile with stone blanket on top shall be placed on the seabed prior to stone column installation works. Stone blanket -> with silt curtain.						

EIA Ref.	EM&A Log Ref	Environmental Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location	When to implement the measures?	What requirements or standards for the measure to achieve?	Implementation Status
S9.11.1 - S9.11.1.2 of HKBCFEIA and S6.10 of TMCLKLEIA	W1	- In addition, dredging operations should be undertaken in such a manner as to minimize resuspension of sediments. Standard good dredging practice measures should, therefore, be implemented including the following requirements which should be written into the dredging and filling contract. 1. Trailer suction hopper dredgers shall not allow mud to overflow; 2. Use of Lean Material Overboard (LMOB) systems shall be prohibited; 3. Mechanical grabs shall be designed and maintained to avoid spillage and should seal tightly while being lifted; 4. Barges and hopper dredgers shall have tight fitting seals to their bottom openings to prevent leakage of material; 5. Any pipe leakages shall be repaired quickly. Plant should not be operated with leaking pipes; 6. Loading of barges and hoppers shall be controlled to prevent splashing of dredged material to the surrounding water. Barges or hoppers shall not be filled to a level which will cause overflow of materials or pollution of water during loading or transportation; 7. Excess material shall be cleaned from the decks and exposed fittings of barges and hopper dredgers before the vessel is moved; 8. Adequate freeboard shall be maintained on barges to reduce the likelihood of decks being washed by wave action; 9. All vessels shall be sized such that adequate clearance is maintained between vessels and the sea bed at all states of the tide to ensure that undue turbidity is not generated by turbulence from vessel movement or propeller	To control construction water quality	Contractor of Contract No. HY/2010/02	During dredging and filling	Construction Stage	- TM-EIAO - Marine Fill Committee Guidelines - DASO Permits Conditions	V

EIA Ref.	EM&A Log Ref	Environmental Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location	When to implement the measures?	What requirements or standards for the measure to achieve?	Implementation Status
		wash; 10. The works shall not cause foam, oil, grease, litter or other objectionable matter to be present in the water within and adjacent to the works site.						
S9.11.1.3 of HKBCFEIA and S6.10 of TMCLKLEIA	W2	<u>Land Works</u> General construction activities on land should also be governed by standard good working practice. Specific measures to be written into the works contracts should include: - wastewater from temporary site facilities should be controlled to prevent direct discharge to surface or marine waters; - sewage effluent and discharges from on-site kitchen facilities shall be directed to Government sewer in accordance with the requirements of the WPCO or collected for disposal offsite. The use of soakaways shall be avoided; - storm drainage shall be directed to storm drains via adequately designed sand/silt removal facilities such as sand traps, silt traps and sediment basins. Channels, earth bunds or sand bag barriers should be provided on site to properly direct stormwater to such silt removal facilities. Catchpits and perimeter channels should be constructed in advance of site formation works and earthworks; - silt removal facilities, channels and manholes shall be maintained and any deposited silt and grit shall be removed regularly, including specifically at the onset of and after each rainstorm; - temporary access roads should be surfaced with crushed stone or gravel;	To control construction water quality	Contractor	All land-based construction sites	Construction stage	TM-EIAO	V

EIA Ref.	EM&A Log Ref	Environmental Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location	When to implement the measures?	What requirements or standards for the measure to achieve?	Implementation Status
		- rainwater pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities; - measures should be taken to prevent the washout of construction materials, soil, silt or debris into any drainage system; - open stockpiles of construction materials (e.g. aggregates and sand) on site should be covered with tarpaulin or similar fabric during rainstorms; - manholes (including any newly constructed ones) should always be adequately covered and temporarily sealed so as to prevent silt, construction materials or debris from getting into the drainage system, and to prevent storm run-off from getting into foul sewers; - discharges of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system; - all vehicles and plant should be cleaned before they leave the construction site to ensure that no earth, mud or debris is deposited by them on roads. A wheel washing bay should be provided at every site exit; - wheel wash overflow shall be directed to silt removal facilities before being discharged to the storm drain; - the section of construction road between the wheel washing bay and the public road should be surfaced with crushed stone or coarse gravel; - wastewater generated from concreting, plastering, internal decoration, cleaning work and other similar activities, shall be screened to						

EIA Ref.	EM&A Log Ref	Environmental Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location	When to implement the measures?	What requirements or standards for the measure to achieve?	Implementation Status
		remove large objects; - vehicle and plant servicing areas, vehicle wash bays and lubrication facilities shall be located under roofed areas. The drainage in these covered areas shall be connected to foul sewers via a petrol interceptor in accordance with the requirements of the WPCO or collected for off site disposal; - the contractors shall prepare an oil / chemical cleanup plan and ensure that leakages or spillages are contained and cleaned up immediately; - waste oil should be collected and stored for recycling or disposal, in accordance with the Waste Disposal Ordinance; - all fuel tanks and chemical storage areas should be provided with locks and be sited on sealed areas. The storage areas should be surrounded by bunds with a capacity equal to 110% of the storage capacity of the largest tank; and - surface run-off from bunded areas should pass through oil/grease traps prior to discharge to the stormwater system.						
S9.14 of HKBCFEIA and S6.10 of TMCLKLEIA	W3	Implement a water quality monitoring programme	Control water quality	Contractor of Contract No. HY/2010/02	At identified monitoring location	During Construction stage	- TM-water - Water Pollution Control Ordinance	V
Ecology (construction Phase)								
S10.7 of HKBCFEIA and S8.14 of TMCLKLE IA	E1	- Use closed grab in dredging works. - Install silt curtain during the construction. - Limit dredging and works fronts. - Construct seawall prior to reclamation	Minimize marine water quality impacts	Contractor	Seawall, reclamation area	During construction	TM-Water	V

EIA Ref.	EM&A Log Ref	Environmental Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location	When to implement the measures?	What requirements or standards for the measure to achieve?	Implementation Status
		filling where practicable. - Good site practices - Strict enforcement of no marine dumping. - Site runoff control - Spill response plan						
S10.7 of HKBCFEIA	E2	Watering to reduce dust generation; prevention of siltation of freshwater habitats; Site runoff should be desilted, to reduce the potential for suspended sediments, organics and other contaminants to enter streams and standing freshwater.	Prevent Sedimentation from Land-based works areas	Contractor	Land-based works areas	During construction	TM-Water	V
S10.7 of HKBCFEIA and S8.14 of TMCLKLEIA	E3	Good site practices, including strictly following the permitted works hours, using quieter machines where practicable, and avoiding excessive lightings during night time.	Prevent disturbance to terrestrial fauna and habitats	Contractor	Land-based works areas	During construction		V
S10.7 of HKBCFEIA and S8.14 of TMCLKLEIA	E4	- Dolphin Exclusion Zone - Dolphin watching plan	Minimize temporary marine habitat loss impact to dolphins	Contractor	Marine works	During marine works	TM-EIAO	V
S10.7 of HKBCFEIA and S8.14 of TMCLKLEIA	E5	- Decouple compressors and other equipment on working vessels - Proposal on design and implementation of acoustic decoupling - measures applied during dredging and reclamation works - Avoidance of percussive piling	Minimize marine noise impacts on dolphins	Contractor	Marine works	During marine works	- TM-EIAO - Marine Park Regulations	
S10.7 of HKBCFEIA and S8.14 of TMCLKLEIA	E6	- Control vessel speed - Skipper training - Predefined and regular routes for working vessels; avoid Brothers Islands	Minimize marine traffic disturbance on dolphins	Contractor	Marine traffic	During marine works		V
S10.10 of HKBCFEIA and	E7	Vessel based dolphin monitoring	Minimize marine traffic disturbance on dolphins	Contractor of Contract No. HY/2010/02	Northeast and Northwest Lantau	During marine works		V

EIA Ref.	EM&A Log Ref	Environmental Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location	When to implement the measures?	What requirements or standards for the measure to achieve?	Implementation Status
S8.14 of TMCLKLEIA								
Fisheries								
S11.7 of HKBCFEIA	F1	- Reduce re-suspension of sediments - Limit dredging and works fronts. - Good site practices	Minimize marine water quality Impacts	Contractor	Seawall, reclamation area	During construction	TM-Water	V
S11.7 of HKBCFEIA	F2	Install silt-grease trap in the drainage system collecting surface runoff	Minimize impacts on marine water quality impacts	Designer	Reclamation area	During construction	TM-Water	V
Landscape & Visual (Detailed Design Phase)								
S14.3.3.1 of HKBCFEIA	LV1	General design measures include: - Roadside planting and planting along the edge of the reclamation is proposed; - Transplanting of mature trees in good health and amenity value where appropriate and reinstatement of areas disturbed during construction by compensatory hydro-seeding and planting; - Protection measures for the trees to be retained during construction activities; - Maximizing new tree, shrub and other vegetation planting to compensate tree felled and vegetation removed; - Providing planting area around peripheral of HKBCF for tree planting screening effect; and	Minimize visual & landscape impacts	Contractor	HKBCF	Design Stage		V

EIA Ref.	EM&A Log Ref	Environmental Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location	When to implement the measures?	What requirements or standards for the measure to achieve?	Implementation Status
		- Providing salt-tolerant native trees along the planter strip at affected seawall and newly reclaimed coastline.						
Landscape & Visual (Construction Phase)								
S14.3.3.3 of HKBCFEIA and S10.9 of TMCLKLEIA	LV2	*Mitigate Landscape Impacts* G1. Grass-hydroseed or sheeting bare soil surface and stock pile areas.	Minimize visual & landscape impacts	Contractor	All construction site areas	Construction stage		V
S10.9 of TMCLKLEIA	LV3	*Mitigate Landscape Impacts* CM1. Existing trees on boundary of the Project Area shall be carefully protected during construction. Detailed Tree Protection Specification shall be provided in the Contract Specification. Under this specification, the Contractor shall be required to submit, for approval, a detailed working method statement for the protection of trees prior to undertaking any works adjacent to all retained trees, including trees in contractor's works areas. (Tree protection measures will be detailed at Tree Removal Application stage). CM2. Trees unavoidably affected by the works shall be transplanted where practical. Trees will be transplanted straight to their final receptor site and not held in a temporary nursery. A detailed Tree Transplanting Specification shall be provided in the Contract Specification. Sufficient time for necessary tree root and crown preparation periods shall be allowed in the project programme.	Minimize landscape impact	Contractor	All construction site areas	Construction stage		V

EIA Ref.	EM&A Log Ref	Environmental Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location	When to implement the measures?	What requirements or standards for the measure to achieve?	Implementation Status
		CM7. Ensure no run-off into water body adjacent to the Project Area. CM9. Recycle/Reuse all felled trees and vegetation, e.g. mulching.						
S14.3.3.3 of HKBCFEIA	LV4	Mitigate Visual Impacts V1. Minimize time for construction activities during construction period. V2. Provide screen hoarding at the portion of the project site/ works areas storage areas near VSRs who have close low-level views to the Project during HKBCF construction.	Minimize visual & landscape impacts	Contractor	All construction site areas	Construction stage		V
S10.9 of TMCLKLEIA	LV5	Mitigate Visual Impacts CM5. Screening of construction works by hoardings around works area in visually unobtrusive colors, to screen works. CM6. Control night-time lighting and glare by hooding all lights. CM8. Avoidance of excessive height and bulk of buildings and structures.	Minimize visual impact	Contractor	All construction site areas	Construction stage		V
EM&A								
S15.2.2 of HKBCFEIA	EM1	An Independent Environmental Checker needs to be employed as per the EM&A Manual.	Control EM&A Performance	Project Proponent	All construction site areas	Construction stage	- EIAO Guidance Note No. 4/2002 - TM_EIAO	V
S15.5 - S15.6 of HKBCFEIA	EM2	An Environmental Team needs to be employed as per the EM&A Manual. Prepare a systematic Environmental Management Plan to ensure effective implementation of the mitigation measures. An environmental impact monitoring needs to be implementing by the Environmental Team to ensure all the requirements given in the EM&A Manual are fully complied with.	Perform environmental monitoring & auditing	Contractor	All construction site areas	Construction stage	- EIAO Guidance Note No. 4/2002 - TM_EIAO	V

Legend: V = implemented; x = not implemented; N/A = not applicable

Appendix H

Statistics on Environmental Complaints, Notification of Summons and Successful Prosecutions

Statistics on Environmental Complaints, Notification of Summons and Successful Prosecutions

Reporting Period	Cumulative Statistic		
	Complaints	Notifications of summons	Successful prosecutions
The reporting period	0	0	0
From commencement date of construction to end of reporting month	10	0	0

Appendix I

Environmental Site Inspection Schedule

東業德勤測試顧問有限公司
ETS-TESTCONSULT LIMITED

Contract No.: HY/2013/02
Hong Kong – Zhuhai – Macao Bridge
Hong Kong Boundary Crossing Facilities – Infrastructure Works Stage I (Western Portion)

Schedule for Weekly Environmental Site Inspection

February 2017

Sun	Mon	Tue	Wed	Thu	Fri	Sat
			1	2 Environmental Site Inspection	3	4
5	6	7	8	9 Environmental Site Inspection	10	11
12	13	14	15	16 Environmental Site Inspection	17	18
19	20	21	22	23 Environmental Site Inspection	24	25
26	27	28				

東業德勤測試顧問有限公司
ETS-TESTCONSULT LIMITED

Contract No.: HY/2013/02
Hong Kong – Zhuhai – Macao Bridge
Hong Kong Boundary Crossing Facilities – Infrastructure Works Stage I (Western Portion)

Schedule for Weekly Environmental Site Inspection

March 2017

Sun	Mon	Tue	Wed	Thu	Fri	Sat
			1	2 Environmental Site Inspection	3	4
5	6	7	8	9 Environmental Site Inspection	10	11
12	13	14	15	16 Environmental Site Inspection	17	18
19	20	21	22	23 Environmental Site Inspection	24	25
26	27	28	29	30 Environmental Site Inspection	31	

Appendix J

Investigation Reports on Action and Limit Level Non-compliance

Report No. 011

Contract No. HY/2013/02
Hong Kong-Zhuhai-Macao Bridge
Hong Kong Boundary Crossing Facilities –Infrastructure Works Stage I (Western Portion)
Investigation Report on Action Level or Limit Level Non-compliance

Report No. **011**

Monitoring Date **06-Feb-17**

The Action and Limit Levels of suspended solids (SS) determined from baseline monitoring data is reproduced below:

Monitoring Parameter	Action Level (AL)	Limit Level (LL)
Depth averaged SS (in mg/L)	23.5	34.4

Mid-Flood tide

Suspended Solids (SS) (in mg/L)

Monitoring Station	Monitoring time	Measured depth averaged	Level Exceeded
IS8	13:32	26.5	Action

*Monitoring was undertaken by the E.T. of Contract No. HY/2010/02

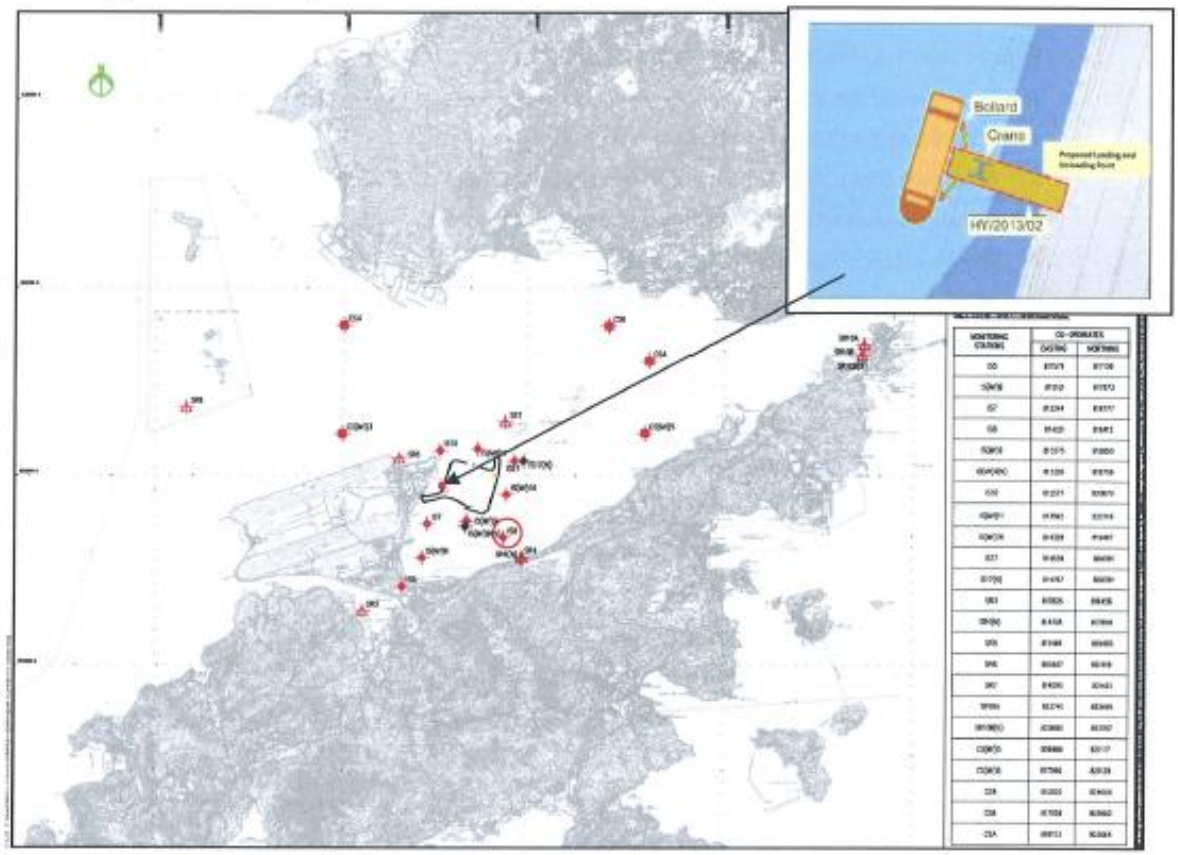

Figure 1 Location of Water Quality Monitoring Stations

Investigation Results:

a) Causes of exceedances

Exceedances were not due to operation of the works under Contract No. HY/2013/02 because:

- It was confirmed that there was no marine works or barge of this Contract worked at HKBCF reclamation site near the sea area or area near the monitoring station IS8 from 04 February 2017 to the water quality monitoring period on 06 February 2017 under Contract No. HY/2013/02 so that it was unlikely to generate suspended solids in the marine water to cause the SS exceedance recorded at the monitoring station IS8 during mid-flood tide on 06 February 2017. **Figure 1** showing the location of the Water Quality Monitoring Station where recorded exceedance and all relevant WQM stations.
- The water quality mitigation measures as mentioned in EM&A Manual and EP was fully implemented in this Contract which including maintenance of the silt curtain on a daily basis by Contract No. HY/2010/02 etc. The exceedance was considered as non-Project related.

b) Action required under the action plan

Refer to Table 9.4 of the updated EM&A Manual for HKBCF.

c) Action taken under the action plan

1. Not applicable as SS was not measured in situ;
2. After considered the above mentioned investigation results, it appears that it was unlikely that the SS exceedance was attributed to the above mentioned work site of this Contract;
3. The exceedance was informed by IEC and ER;
4. Monitoring data, all plant, equipment and Contractor's working methods were checked;

d) ET's conclusions and recommendations for mitigation

- All relevant water quality mitigation measurement was checked to be fully implemented.
- The Contractor was reminded to ensure all construction activities that generate wastewater with high concentrations of suspended solids (SS) should be collected to sedimentation tanks or package treatment systems for proper treatment prior to disposal.
- The Contractor was reminded to ensure that all silt removal facilities, channels and manholes shall be maintained and any deposited silt and grit shall be removed regularly.

e) Contractor's actions to implement the mitigation

- All construction activities that generate wastewater with high concentrations of suspended solids (SS) like wheel washing etc. was collected to sedimentation tanks or package treatment systems for proper treatment prior to disposal.
- All silt removal facilities, channels and manholes was maintained and any deposited silt and grit was removed regularly.

ET Leader Signature & Date  24-Feb-17

Report No. 012

Contract No. HY/2013/02
Hong Kong-Zhuhai-Macao Bridge
Hong Kong Boundary Crossing Facilities –Infrastructure Works Stage I (Western Portion)
Investigation Report on Action Level or Limit Level Non-compliance

Report No. **012**

Monitoring Date **10-Feb-17**

The Action and Limit Levels of suspended solids (SS) determined from baseline monitoring data is reproduced below:

Monitoring Parameter	Action Level (AL)	Limit Level (LL)
Depth averaged SS (in mg/L)	23.5	34.4

Mid-Ebb tide

Suspended Solids (SS) (in mg/L)

Monitoring Station	Monitoring time	Measured depth averaged	Level Exceeded
SR6	11:29	23.8	Action

*Monitoring was undertaken by the E.T. of Contract No. HY/2010/02

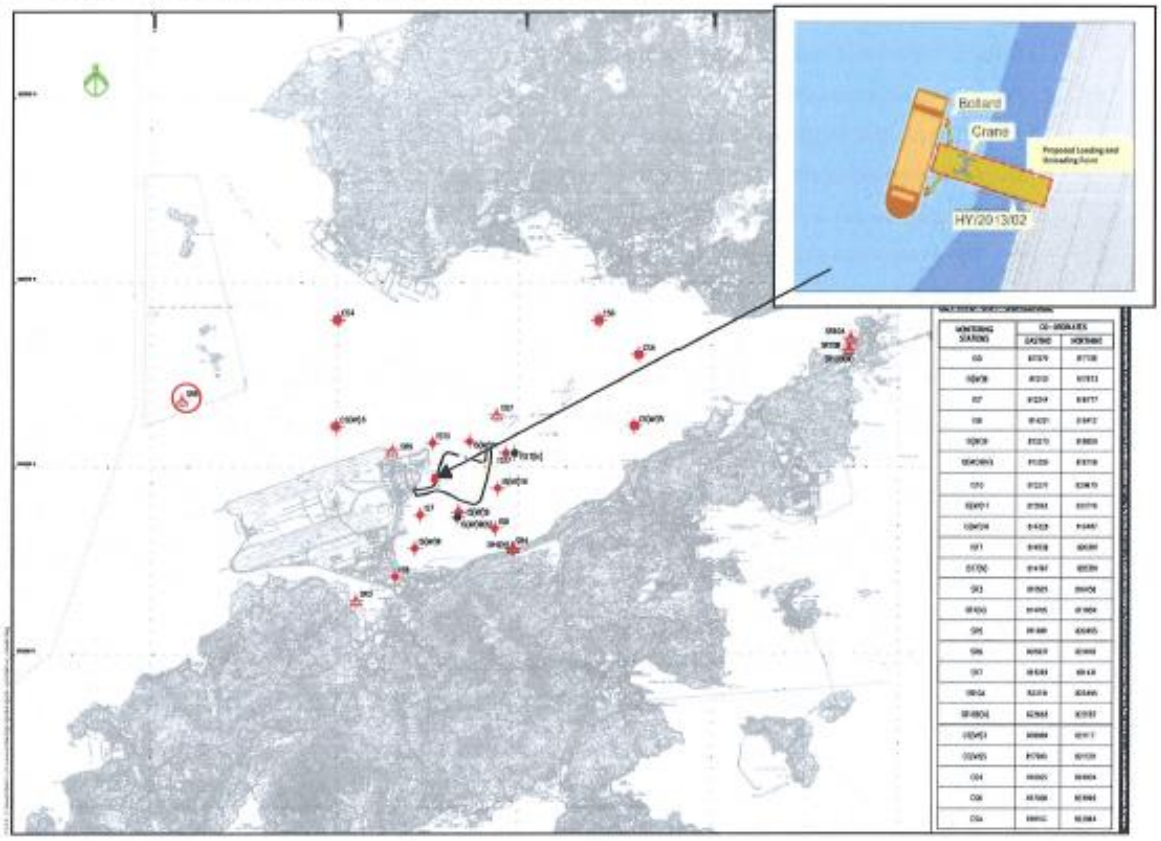

Figure 1 Location of Water Quality Monitoring Stations

Investigation Results:

a) Causes of exceedances

Exceedances were not due to operation of the works under Contract No. HY/2013/02 because:

- It was confirmed that except one marine pre-cat segment delivery which travelled passing through the north-east side with distance more than 4000 meters from the monitoring station SR6, there was no marine works or barge of this Contract worked at HKBCF reclamation site near the sea area or area near the monitoring station SR6 from 08 February 2017 to the water quality monitoring period on 10 February 2017 under Contract No. HY/2013/02 so that it was unlikely to generate suspended solids in the marine water to cause the SS exceedance recorded at the monitoring station SR6 during mid-ebb tide on 10 February 2017. **Figure 1** showing the location of the Water Quality Monitoring Station where recorded exceedance and all relevant WQM stations.
- The water quality mitigation measures as mentioned in EM&A Manual and EP was fully implemented in this Contract which including maintenance of the silt curtain on a daily basis by Contract No. HY/2010/02 etc. The exceedance was considered as non-Project related.

b) Action required under the action plan

Refer to Table 9.4 of the updated EM&A Manual for HKBCF.

c) Action taken under the action plan

1. Not applicable as SS was not measured in situ;
2. After considered the above mentioned investigation results, it appears that it was unlikely that the SS exceedance was attributed to the above mentioned work site of this Contract;
3. The exceedance was informed by IEC and ER;
4. Monitoring data, all plant, equipment and Contractor's working methods were checked;

d) ET's conclusions and recommendations for mitigation

- All relevant water quality mitigation measurement was checked to be fully implemented.
- The Contractor was reminded to ensure all construction activities that generate wastewater with high concentrations of suspended solids (SS) should be collected to sedimentation tanks or package treatment systems for proper treatment prior to disposal.
- The Contractor was reminded to ensure that all silt removal facilities, channels and manholes shall be maintained and any deposited silt and grit shall be removed regularly.

e) Contractor's actions to implement the mitigation

- All construction activities that generate wastewater with high concentrations of suspended solids (SS) like wheel washing etc. was collected to sedimentation tanks or package treatment systems for proper treatment prior to disposal.
- All silt removal facilities, channels and manholes was maintained and any deposited silt and grit was removed regularly.

ET Leader Signature & Date  04-Mar-17

Report No. 013

Contract No. HY/2013/02
Hong Kong-Zhuhai-Macao Bridge
Hong Kong Boundary Crossing Facilities –Infrastructure Works Stage I (Western Portion)
Investigation Report on Action Level or Limit Level Non-compliance

Report No. **013**

Monitoring Date **15-Feb-17**

The Action and Limit Levels of suspended solids (SS) determined from baseline monitoring data is reproduced below:

Monitoring Parameter	Action Level (AL)	Limit Level (LL)
Depth averaged SS (in mg/L)	23.5	34.4

Mid-Flood tide

Suspended Solids (SS) (in mg/L)

Monitoring Station	Monitoring time	Measured depth averaged	Level Exceeded
SR7	09:35	23.6	Action

*Monitoring was undertaken by the E.T. of Contract No. HY/2010/02

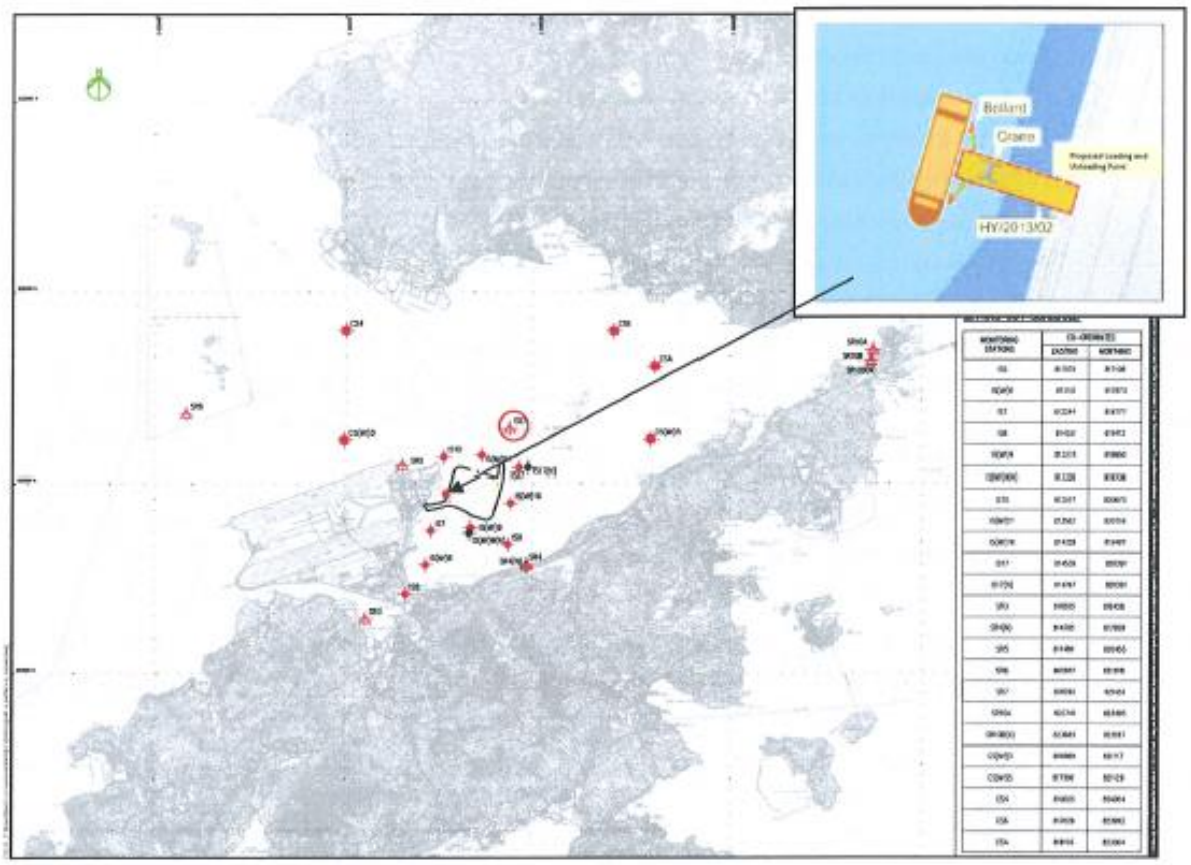

Figure 1 Location of Water Quality Monitoring Stations

Investigation Results:

a) Causes of exceedances

Exceedances were not due to operation of the works under Contract No. HY/2013/02 because:

- It was confirmed that there was no marine works or barge of this Contract worked at HKBCF reclamation site near the sea area or area near the monitoring station SR7 from 13 February 2017 to the water quality monitoring period on 15 February 2017 under Contract No. HY/2013/02 so that it was unlikely to generate suspended solids in the marine water to cause the SS exceedance recorded at the monitoring station SR7 during mid-flood tide on 15 February 2017. **Figure 1** showing the location of the Water Quality Monitoring Station where recorded exceedance and all relevant WQM stations.
- The water quality mitigation measures as mentioned in EM&A Manual and EP was fully implemented in this Contract which including maintenance of the silt curtain on a daily basis by Contract No. HY/2010/02 etc. The exceedance was considered as non-Project related.

b) Action required under the action plan

Refer to Table 9.4 of the updated EM&A Manual for HKBCF.

c) Action taken under the action plan

1. Not applicable as SS was not measured in situ;
2. After considered the above mentioned investigation results, it appears that it was unlikely that the SS exceedance was attributed to the above mentioned work site of this Contract;
3. The exceedance was informed by IEC and ER;
4. Monitoring data, all plant, equipment and Contractor's working methods were checked;

d) ET's conclusions and recommendations for mitigation

- All relevant water quality mitigation measurement was checked to be fully implemented.
- The Contractor was reminded to ensure all construction activities that generate wastewater with high concentrations of suspended solids (SS) should be collected to sedimentation tanks or package treatment systems for proper treatment prior to disposal.
- The Contractor was reminded to ensure that all silt removal facilities, channels and manholes shall be maintained and any deposited silt and grit shall be removed regularly.

e) Contractor's actions to implement the mitigation

- All construction activities that generate wastewater with high concentrations of suspended solids (SS) like wheel washing etc. was collected to sedimentation tanks or package treatment systems for proper treatment prior to disposal.
- All silt removal facilities, channels and manholes was maintained and any deposited silt and grit was removed regularly.

ET Leader Signature & Date 02-Mar-17